



IEI Technology Corp .



MODEL:

ACT-08A-ATOM

**Fanless All-in-one Access Control Terminal with
Intel® Celeron® M CPU, Touch Screen, Wireless LAN,
RFID Reader, Digital Camera and Microphone**

User Manual

Rev. 1.00 25 November, 2008





Revision

Date	Version	Changes
25 November, 2008	1.00	Initial release

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Manual Conventions



WARNING!

Warnings appear where overlooked details may cause damage to the equipment or result in personal injury. Warnings should be taken seriously. Warnings are easy to recognize. The word “warning” is written as “**WARNING**,” both capitalized and bold and is followed by text. The text is the warning message. A warning message is shown below:



WARNING:

This is an example of a warning message. Failure to adhere to warning messages may result in permanent damage to the ACT-08A-ATOM or personal injury to the user. Please take warning messages seriously.



CAUTION!

Cautionary messages should also be heeded to help reduce the chance of losing data or damaging the ACT-08A-ATOM. Cautions are easy to recognize. The word “caution” is written as “**CAUTION**,” both capitalized and bold and is followed. The italicized text is the cautionary message. A caution message is shown below:

ACT-08-ATOM Access Control Terminal



CAUTION:

This is an example of a caution message. Failure to adhere to cautions messages may result in permanent damage to the ACT-08A-ATOM. Please take caution messages seriously.



NOTE:

These messages inform the reader of essential but non-critical information. These messages should be read carefully as any directions or instructions contained therein can help avoid making mistakes. Notes are easy to recognize. The word “note” is written as “**NOTE**,” both capitalized and bold and is followed by text. The text is the cautionary message. A note message is shown below:



NOTE:

This is an example of a note message. Notes should always be read. Notes contain critical information about the ACT-08A-ATOM. Please take note messages seriously.

Packing List

**NOTE:**

If any of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the ACT-08A-ATOM from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@iei.com.tw.

The items listed below should all be included in the ACT-08A-ATOM series package.

- 1 x ACT-08A-ATOM system
- 1 x Screw set
- 1 x Power adapter
- 1 x Power cord
- 1 x eSATA cable
- 1 x Touch pen
- 1 x Mini jumper pack (2.0 mm)
- 1 x User Manual and driver CD

Images of the above items are shown in **Chapter 3** on **page 36**.

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Chapter

1

Introduction

1.1 ACT-08A-ATOM All-in-One Access Control Terminal



Figure 1-1: ACT-08A-ATOM All-in-One Access Control Terminal

The ACT-08A-ATOM is 1.6 GHz Intel® Atom™ powered access control terminal with a RFID reader and a rich variety of functions. The ACT-08A-ATOM is designed for easy and simplified integration in to access control applications.

An Intel® 945GSE graphics memory controller hub (GMCH) coupled with an Intel® ICH7-M input/output controller hub ensures optimal memory, graphics, and peripheral I/O support. The system comes with 1.0 GB of preinstalled DDR2 SDRAM and supports a maximum of 2.0 GB of DDR2 SDRAM ensuring smooth data throughputs with reduced bottlenecks and fast system access.

Two serial ports and two external USB 2.0 ports ensure simplified connectivity to a variety of external peripheral devices. Wi-Fi capabilities and two RJ-45 Ethernet connectors ensure smooth connection of the system to an external LAN.

ACT-08A-ATOM Access Control Terminal

1.1.1 Features and Model Variations

The ACT-08A-ATOM features the following:

- 8.4" TFT LCD with resistive type touch screen
- 1.6 GHz Intel® Atom™ CPU with 512 KB L2 cache preinstalled
- Built-in RFID reader supports Mifare card and EM card read/write
- Preinstalled 1 GB DDR2 memory module
- 802.11 b/g wireless module
- One RS-232 port and one RS-232/422/485 port
- Two standard USB 2.0 ports
- CompactFlash® Type II slot
- Provides RFID configuration tool to read or write Mifare tags and EM tags
- Built-in digital camera and microphone
- Built-in two 2.0 W stereo speakers
- IP 64 compliant front panel
- RoHS compliance

1.1.2 Applications

The ACT-08A-ATOM is elegant yet sophisticated systems that are easily implemented in diverse environments including:

- Door access
- Time attendance
- Cashless payment terminal
- Parking access control

1.2 External Overview

1.2.1 General Description

The stylish ACT-08A-ATOM access control terminal comprises of a screen, rear panel, top panel, bottom panel and two side panels (left and right). An ABS/PC plastic front frame surrounds the front screen. The rear panel provides screw holes for a wall-mounting bracket compliant with VESA FDMI standard. An I/O interface panel on the rear panel of

the ACT-08A-ATOM provides access to external interface connectors that include LAN, USB 2.0, serial port, reset button, power connector and power switch.

1.2.2 Front Panel

The front side of the ACT-08A-ATOM is a flat panel TFT LCD screen surrounded by an ABS/PC plastic hard cover. The top of the front panel has one 300 K pixel digital camera, two microphones and one power LED indicator. The bottom of the front panel features a RFID reader for Mifare/EM tag and two speakers for stereo sound (**Figure 1-2**).

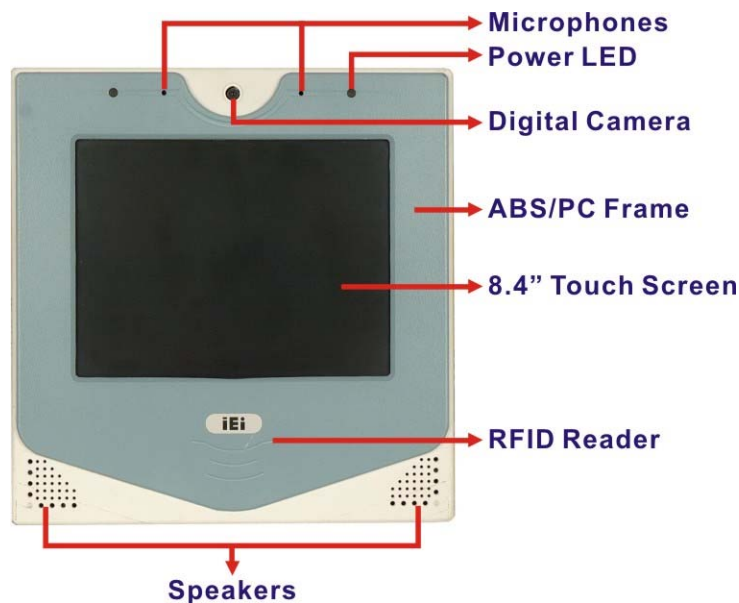


Figure 1-2: ACT-08A-ATOM Front View

1.2.3 Rear Panel

The rear panel provides access to retention screw holes that support the VESA MIS-D 75 mounting. Refer to **Figure 1-3**.

ACT-08A-ATOM Access Control Terminal

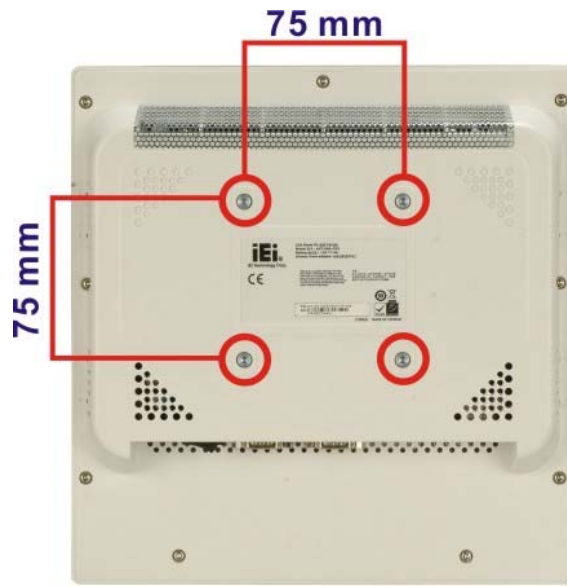


Figure 1-3: ACT-08A-ATOM Rear View

1.2.4 Bottom Panel

The I/O interface panel located on the bottom panel of the ACT-08A-ATOM (**Figure 1-4**) has the following I/O interface connectors:

- 1 x 12 V DC power jack
- 1 x Power switch
- 1 x External SATA connector
- 1 x RS-232 port
- 1 x RS-232 or RS-422/485 port
- 2 x GbE connectors
- 2 x USB 2.0 ports
- 1 x Reset button

The external I/O interface connectors on the rear panel are shown in **Figure 1-4**.

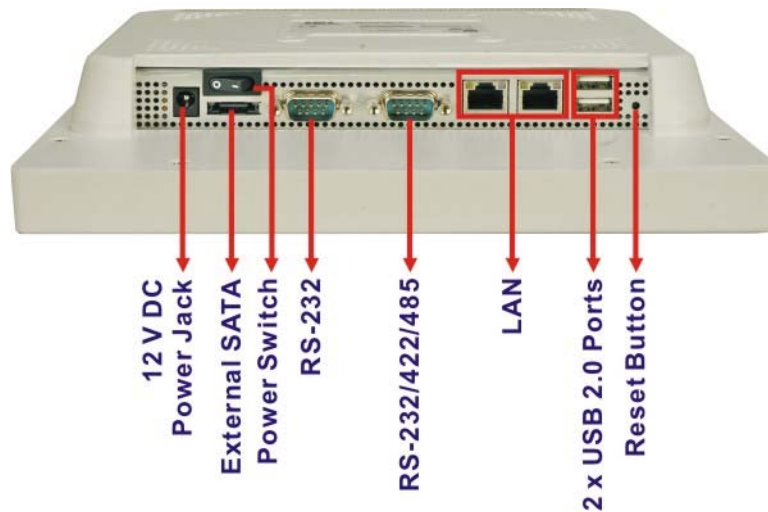


Figure 1-4: ACT-08A-ATOM Bottom View

1.2.5 Side Panels

The two side panels of the ACT-08A-ATOM provide access to slots that support panel mount and rack mount. See **Figure 1-5**.

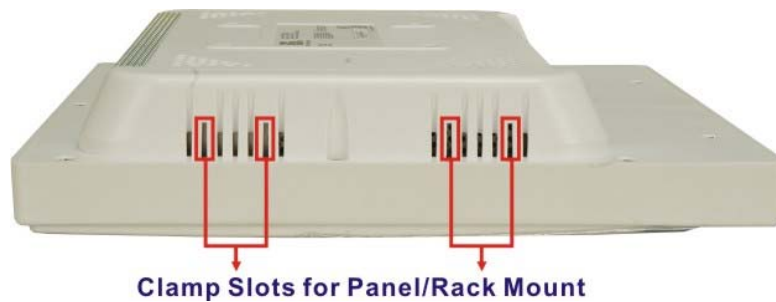


Figure 1-5: ACT-08A-ATOM Side View

1.3 Internal Overview

The ACT-08A-ATOM has the following components installed internally:

- 1 x Motherboard
- 1 x 1 GB DDR2 SDRAM SO-DIMM
- 1 x Wireless module
- 1 x RFID reader

ACT-08A-ATOM Access Control Terminal

- 2 x Speakers
- 1 x Digital camera
- 2 x Microphones

1.4 Specifications

1.4.1 Preinstalled Hardware Components

The ACT-08A-ATOM has the following preinstalled components:

- 1 x Motherboard
- 1 x TFT LCD screen
- 1 x Touch screen
- 1 x Inverter
- 1 x Wireless LAN module
- 1 x DDR2 memory module
- 1 x AT/ATX switch

The following section lists the system specifications. The technical specifications for some other preinstalled components are shown in the **Appendix A**.

1.4.2 System Specifications

The technical specifications for the ACT-08A-ATOM system are listed in **Table 1-1**.

Specification	ACT-08A-ATOM
LCD Size	8.4"
Max. Resolution	800 x 600 (XGA)
Brightness	400 cd/m ²
Contrast Ratio	500:1
LCD Color	262 K
Pixel Pitch (mm)	0.213 (H) x 0.213 (V)

ACT-08A-ATOM Access Control Terminal

Viewing Angle (H-V)	120 (H) / 100 (V)
Backlight MTBF	50,000 hours
SBC Model	AFLMB-ATOM
CPU	1.6 GHz Intel® Atom™ CPU with 512 KB L2 cache
GMCH	Intel® 945GSE
Memory	One 1 GB DDR2 SDRAM SO-DIMM pre-installed (system max. 2 GB)
SSD	CF Type II
Watchdog Timer	Software Programmable supports 1 sec. ~ 255 sec. system reset
Audio	AMP 2.0 W + AMP 2.0 W (built-in stereo speakers)
Expansion	1 x PCIe Mini card slot (for wireless LAN 802.11 b/g module)
Camera and MIC	Built-in 300 K pixel camera and digital microphone
RFID	Supports MIFARE and EM RFID
Construction Material	ABS + PC plastic front frame Aluminum alloy chassis
Front Panel Color	Blue and White
Mounting	Panel, Wall, Stand or Arm (VESA MIS-D 75)
Dimensions (W x H x D) (mm)	244.69 x 251.72 x 53.3
Operation Temperature	-10°C ~ 50°C
Net weight	1.1 kg
IP level (front panel)	IP 64
EMC	CE and FCC

ACT-08A-ATOM Access Control Terminal

Safety	CB and CCC
Touch Screen	4-wire resistive type
Power Adapter	48 W
Power Consumption	35 W
I/O Ports and Switches (Rear Panel)	1 x 12 V DC power jack
	1 x Power switch
	1 x External SATA connector
	1 x RS-232 port
	1 x RS-232 or RS-422/485 port
	2 x GbE connectors
	2 x USB 2.0
	1 x Reset button

Table 1-1: ACT-08A-ATOM System Specifications



Chapter

2

Detailed Specifications

ACT-08A-ATOM Access Control Terminal

2.1 Dimensions

The following sections provide detailed schematics and information on the dimensions of the ACT-08A-ATOM.

2.1.1 ACT-08A-ATOM Dimensions

The dimensions of the ACT-08A-ATOM are shown in **Figure 2-1** and listed below.

- **Width:** 244.69 mm
- **Height:** 251.72 mm
- **Depth:** 53.3 mm

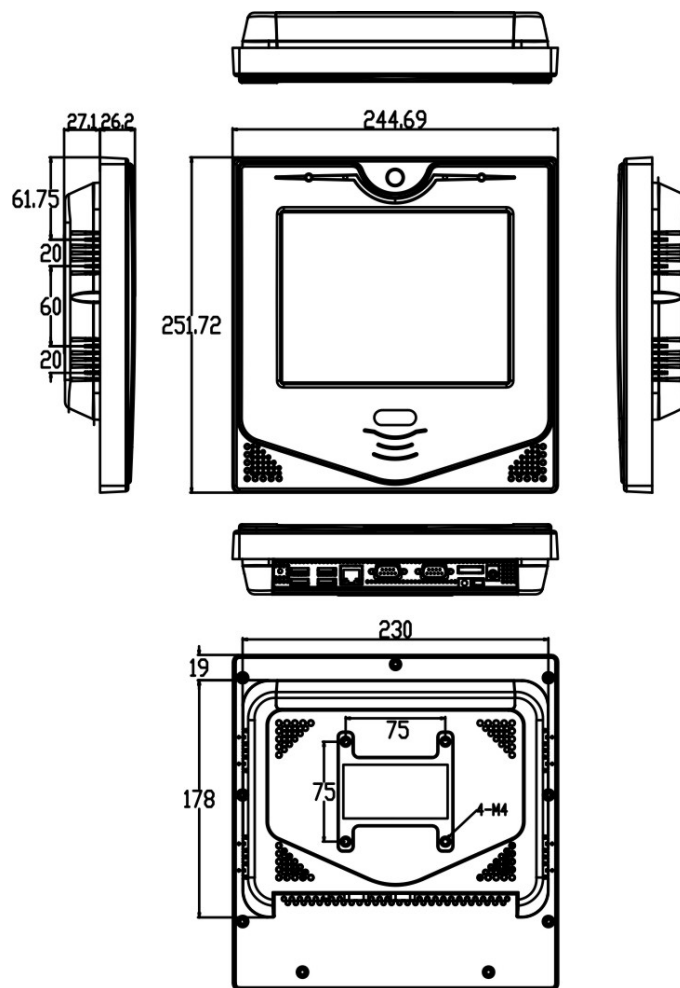


Figure 2-1: ACT-08A-ATOM Dimensions (mm)

2.2 Processor Support

A 45nm N270 Intel® Atom™ processor is installed in the system. The processor has a CPU speed of 1.6 GHz and a 533 MHz front side bus (FSB). The processor also comes with a 512 KB L2 cache and a 1.6 GHz L2 cache speed. Some of the features of the Intel® Atom™ processor N270 are listed below:

- On-die, primary 32-kB instructions cache and 24-kB write-back data cache
- 533-MHz source-synchronous front side bus (FSB)
- 2-Threads support
- On-die 512-kB, 8-way L2 cache
- Support for IA 32-bit architecture
- Intel® Streaming SIMD Extensions-2 and -3 (Intel® SSE2 and Intel® SSE3) support and Supplemental Streaming SIMD Extension 3 (SSSE3) support
- Micro-FCBGA8 packaging technologies
- Thermal management support via Intel® Thermal Monitor 1 and Intel Thermal Monitor 2
- FSB Lane Reversal for flexible routing
- Supports C0/C1(e)/C2(e)/C4(e)
- L2 Dynamic Cache Sizing
- Advanced power management features including Enhanced Intel SpeedStep® Technology
- Execute Disable Bit support for enhanced security

2.3 Motherboard Components

The following sections describe some of the features on the motherboard.

2.3.1 Memory Support

2.3.1.1 Installed Memory

One 1 GB DDR2 SDRAM SO-DIMM is installed in the ACT-08A-ATOM and controlled by the Northbridge installed on the internal motherboard.

ACT-08A-ATOM Access Control Terminal

2.3.1.2 Maximum Memory

The Intel® 945GSE is capable of supporting one 200-pin 2.0 GB (system max.) 533 MHz or 400 MHz DDR2 SDRAM SO-DIMM. If different memory is required, please contact an IEI sales representative and discuss the necessary system requirement.

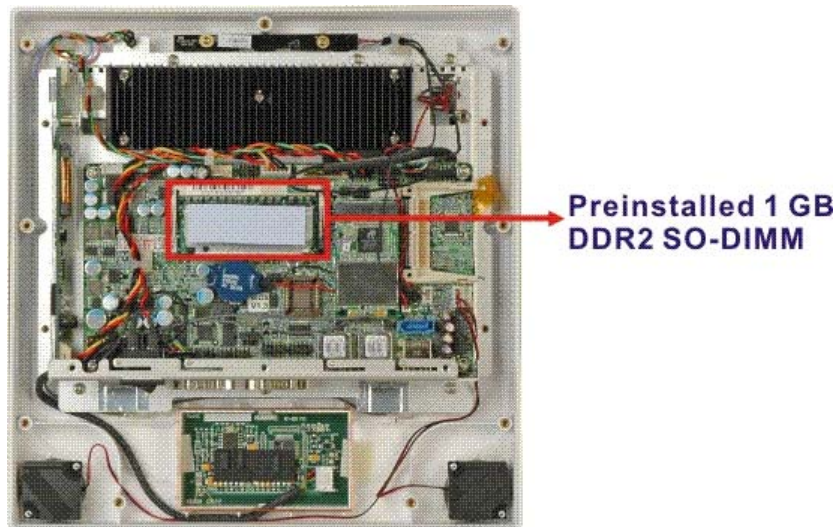


Figure 2-2: Memory Module and Memory Socket

2.3.2 Storage Capacity

The system can also support a CompactFlash® Type II (CF Type II) memory disk (**Figure 2-3**).



Figure 2-3: CompactFlash® Slot

2.4 ACT-08A-ATOM Front Side

2.4.1 Monitor

An 8.4" SVGA LCD screen is installed on the front of the ACT-08A-ATOM. The installed monitor has a pixel resolution of 800 x 600 pixels with 400 nits high brightness. The screen is shown in **Figure 2-4** below.

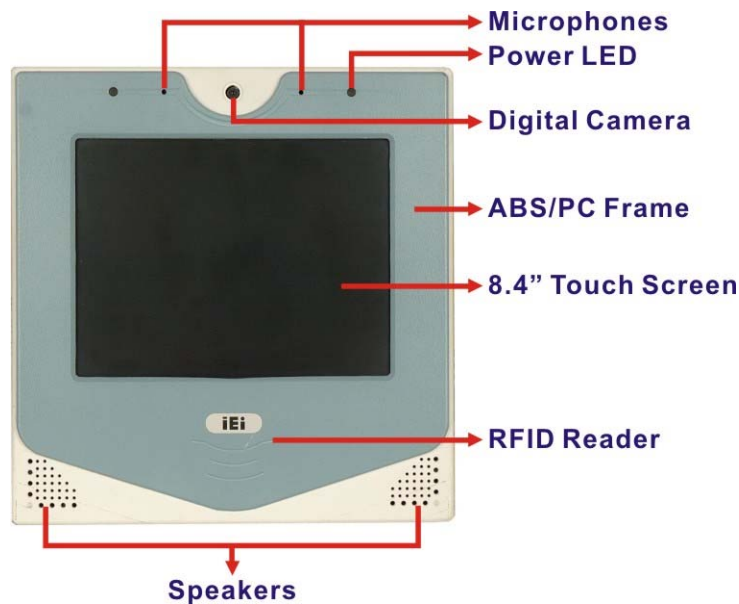


Figure 2-4: SVGA Screen

2.4.2 Touch-Screen Module

A controller for the 4-wire resistive touch screen is connected to the motherboard through the RS-232 interface. The sensitive touch screen is accurate, reliable and durable.

2.4.3 RFID Reader

A RFID reader is integrated in the front panel and supports Mifare 13.56 MHz or EM 125 KHz RFID tags. The ACT-08A-ATOM also came with a RFID tool to read or write data

ACT-08A-ATOM Access Control Terminal

on or into the Mifare tags or EM tags. Please refer to **Chapter 5** for detailed description of the RFID tool (RF320).

2.4.4 Digital Camera and Microphone

The ACT-08A-ATOM is built in with a 300 K digital camera and a set of microphone on the front panel (**Figure 2-4**). The user can use the camera and microphone for facial and voice recognition for access control applications.

2.4.5 Stereo Speakers

Two 2.0 W stereo speakers on the front side of the ACT-08A-ATOM are interfaced to the system through a class-B dual output amplifier (**Figure 2-4**).

2.5 External Peripheral Interface Connectors

The following section describes the external peripheral interface connectors on the bottom panel of the ACT-08A-ATOM.

2.5.1 Serial Port Connectors

The ACT-08A-ATOM has two serial ports on the bottom panel. One of these ports (COM 1) is RS-232 only port and the other serial port (COM 3) can be configured as a RS-232, RS-422 or an RS-485 serial port.

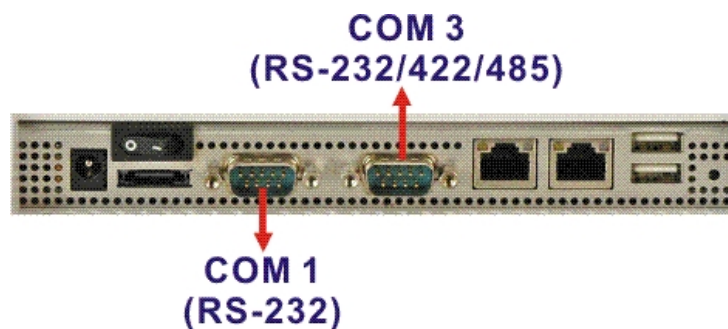


Figure 2-5: COM Ports

2.5.2 LAN Connectivity

The ACT-08A-ATOM supports GbE connectivity through the RJ-45 connector on the bottom panel.

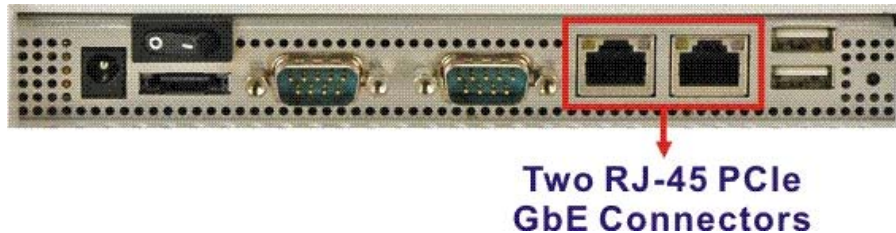


Figure 2-6: RJ-45 Ethernet Connector

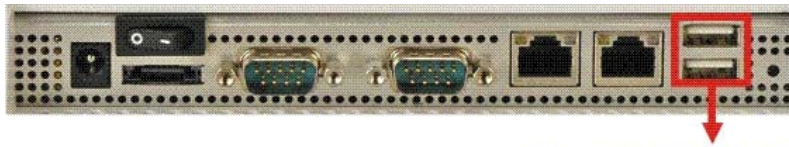
The PCIe lane from the Intel® ICH7-M chipset of the ACT-08A-ATOM is interfaced to a Realtek RTL8111CP PCIe gigabit Ethernet (GbE) controller. The RTL8111CP is then connected directly to the RJ-45 connector on the bottom panel and provides external GbE connectivity. Some of the RTL8111CP controller features are listed below:

- Integrated 10/100/1000 transceiver
- Supports PCI Express™ 1.1
- Fully compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab
- Supports IEEE 802.1P Layer 2 Priority Encoding
- Supports IEEE 802.1Q VLAN tagging
- Serial EEPROM
- Transmit/Receive on-chip buffer support
- 64-pin QFN package (Green package)

2.5.3 External USB Connectors

The ACT-08A-ATOM has two USB 2.0 connectors. All of the USB 2.0 connectors are interfaced directly to the USB controllers on the Intel® ICH7-M. The USB connectors are fully compliant with USB specification Revision 2.0 and USB specification Revision 1.1 and can be interfaced to both USB 1.1 and USB 2.0 compliant devices.

ACT-08A-ATOM Access Control Terminal

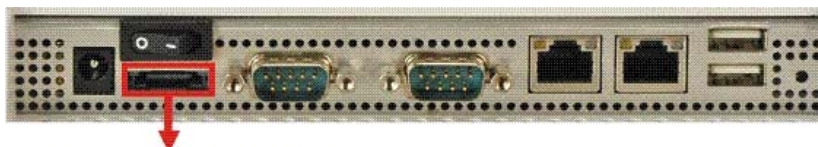


Two USB 2.0 Ports

Figure 2-7: External USB Ports

2.5.4 External SATA Connector

An external SATA connector on the bottom panel interfaces to Intel® ICH7-M chipset on the motherboard that connects through the serial ATA bus. The external SATA connector supports one external SATA drive.



**External SATA
Connector**

Figure 2-8: External SATA Connector

2.6 System Power

2.6.1 Power Mode

The system can be run in the AT power mode or the ATX power mode. Both these power modes are described below.

2.6.1.1 ATX Power Mode (Default)

With the ATX mode selected, the ACT-08A-ATOM panel PC goes in a standby mode when it is turned off. The panel PC can be easily turned on via network or a power switch in standby mode. Remote power control is perfect for advertising applications since the broadcasting time for each panel PC can be set individually and controlled remotely. Other possible application includes

- Security surveillance
- Point-of-Sale (POS)
- Advertising terminal

2.6.1.2 AT Power Mode

With the AT mode selected, the power is controlled by a central power unit rather than a power switch. The ACT-08A-ATOM panel PC turns on automatically when the power is connected. The AT mode benefits a production line to control multiple panel PCs from a central management center and other applications including:

- ATM
- Self-service kiosk
- Plant environment monitoring system
- Factory automation platform
- Manufacturing shop flow

2.6.2 Power Adapter

The system is shipped with a 100 V to 240 V IEI AC power adapter that has a maximum power output of 48 W. The power adapter has a 12 V DC output connector.

2.6.3 Power Connectors

A standard power jack on the bottom panel of the ACT-08A-ATOM is connected to the power adapter and can input 12 V of direct current (DC) into the system. The power connector and power switch are shown in **Figure 2-9** below.

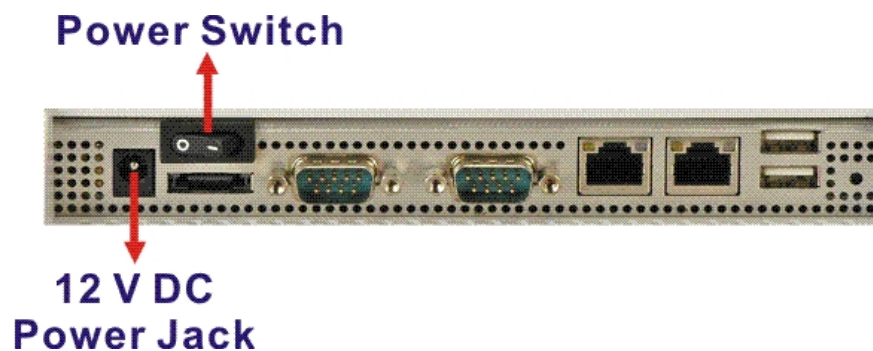


Figure 2-9: Power Connector and Power Switch

ACT-08A-ATOM Access Control Terminal

2.7 Wireless Connection

The following section describes the wireless modules on the circuit.

2.7.1 Wireless Ethernet

An integrated 802.11 b/g wireless LAN module and PIFA antenna on the ACT-08A-ATOM ensure an uninterrupted wireless connection. PIFA antennas can receive high-quality, uniform signals in any location from all directions without any signal degradation or impedance and are the most efficient antennas on the market.

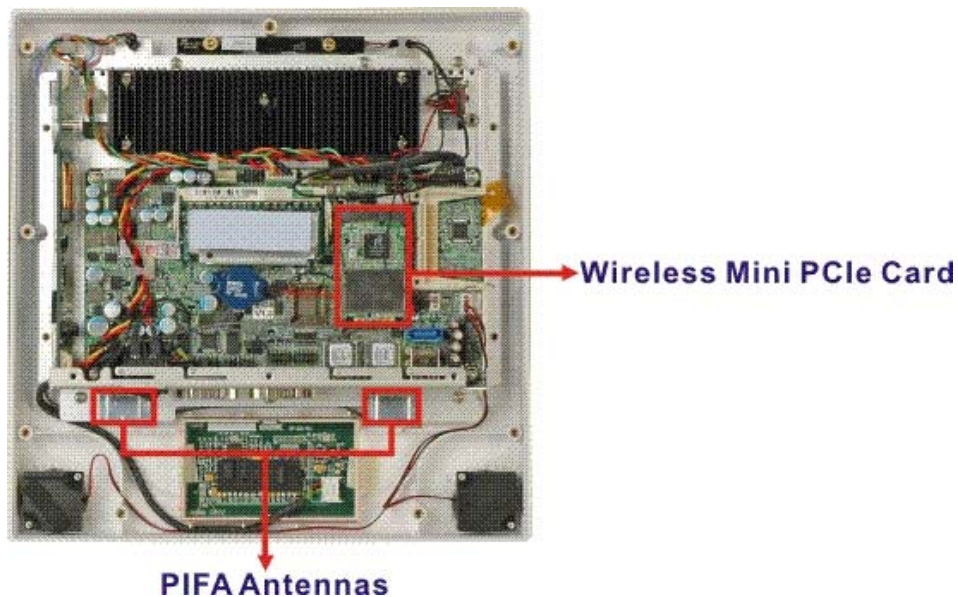


Figure 2-10: Wireless LAN PCIe Mini Card

Chapter

3

Unpacking

ACT-08A-ATOM Access Control Terminal

3.1 Unpacking

To unpack the access control terminal, follow the steps below:











WARNING!

The front side LCD screen has a protective plastic cover stuck to the screen. Only remove the plastic cover after the ACT-08A-ATOM has been properly installed. This ensures the screen is protected during the installation process.

- Step 1:** Use box cutters, a knife or a sharp pair of scissors that seals the top side of the external (second) box.
- Step 2:** Open the external (second) box.
- Step 3:** Use box cutters, a knife or a sharp pair of scissors that seals the top side of the internal (first) box.
- Step 4:** Lift the monitor out of the boxes.
- Step 5:** Remove both polystyrene ends, one from each side.
- Step 6:** Pull the plastic cover off the ACT-08A-ATOM.
- Step 7:** Make sure all the components listed in the packing list are present.

3.1.1 Packing List

The ACT-08A-ATOM access control terminal is shipped with the following components:

Quantity	Item	Image
1	ACT-08A-ATOM access control terminal	
1	Screw set	
1	Power adapter	
1	Power cord	
1	Touch pen	
1	User manual CD and driver CD	
1	External SATA cable	
1	Mini jumper pack (2.0 mm)	

If any of these items are missing or damaged, contact the distributor or sales representative immediately.

Chapter

4

Installation

4.1 Anti-static Precautions



WARNING:

Failure to take ESD precautions during the maintenance of the ACT-08A-ATOM may result in permanent damage to the ACT-08A-ATOM and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the ACT-08A-ATOM. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the ACT-08A-ATOM is accessed internally, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband:*** - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding:*** - Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad:*** - When configuring the ACT-08A-ATOM, place it on an anti-static pad. This reduces the possibility of ESD damaging the ACT-08A-ATOM.
- ***Only handle the edges of the PCB:*** - When handling the PCB, hold the PCB by the edges.

4.2 Installation Precautions

When installing the POS system, please follow the precautions listed below:

- **Power turned off:** When installing the system, make sure the power is off. Failing to turn off the power may cause severe injury to the body and/or damage to the system.
- **Certified Engineers:** Only certified engineers should install and modify onboard functionalities.

ACT-08A-ATOM Access Control Terminal

- **Anti-static Discharge:** If a user open the rear panel of the system, to configure the jumpers or plug in added peripheral devices, ground themselves first and wear an anti-static wristband.

4.3 Preinstalled Components

The following components are all preinstalled.

- Motherboard
- TFT LCD screen
- DDR2 memory module
- Resistive type touch screen
- RFID module
- Wireless LAN module

Preinstalled OEM customizations may include the following.

- Different DDR2 memory module
- CF card

Component installation is described in **the following sections**.

4.4 Installation and Configuration Steps

The following installation steps must be followed.

Step 1: Unpack the ACT-08A-ATOM

Step 2: Install CF card

Step 3: Configure the system

Step 4: Mount the ACT-08A-ATOM

Step 5: Connect peripheral devices to the bottom panel of the ACT-08A-ATOM.

4.5 Rear Panel Removal

To access the CF slot and AT/ATX switch, the back cover must be removed. To remove the back cover, please follow the steps below.

Step 1: Put the front panel of the ACT-08A-ATOM on a table.

Step 2: **Remove the rear panel.** Remove the nine retention screws (**Figure 4-1**) from the rear panel and lift the back cover off the ACT-08A-ATOM.

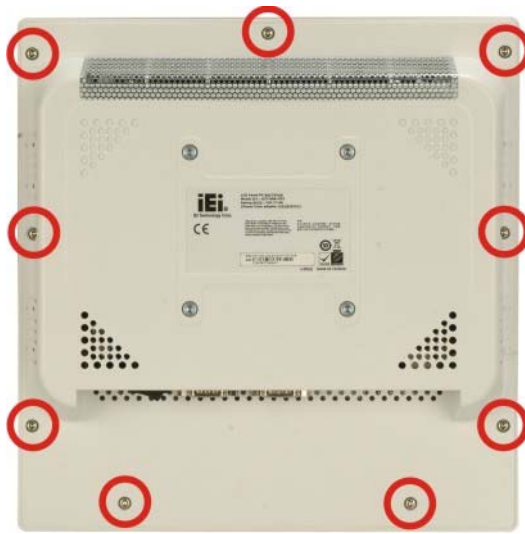


Figure 4-1: Rear Panel Retention Screws

4.6 CF Card Installation

The ACT-08A-ATOM has one CF Type II slot. To install the CF card, follow the instructions below.

Step 1: **Remove the rear panel.** Refer to **Section 4.5**.

Step 2: **Locate the CF socket.** The CF socket is located inside the left side panel of the ACT-08A-ATOM. See **Figure 4-2**

ACT-08A-ATOM Access Control Terminal

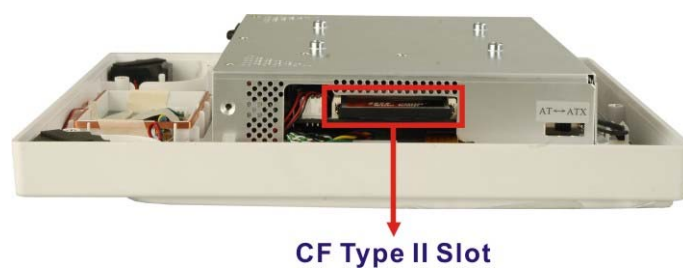


Figure 4-2: CF Socket Location

Step 3: Install the CF Card. Correctly align the CF card with the socket and insert the CF card into the socket. See **Figure 4-3**.



Figure 4-3: CF Card Installation

Step 4: Replace the rear panel. Make sure the rear panel is properly secured with the previously removed retention screws.

4.7 Jumper Settings



NOTE:

A jumper is a metal bridge used to close an electrical circuit. It consists of two or three metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To CLOSE/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.

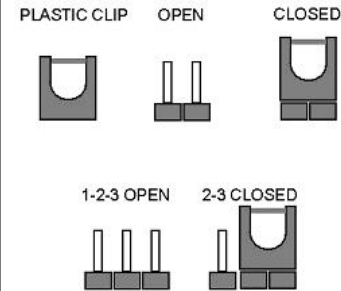


Figure 4-4: Jumper Locations

The following jumpers can be found on the motherboard installed in the ACT-08A-ATOM. Before the ACT-08A-ATOM is installed, the jumpers must be set in accordance with the desired configuration. The jumpers on the ACT-08A-ATOM motherboard are listed in

Table 4-1.

Description	Label	Type
Clear CMOS	J_COMS1	2-pin header
COM1 Pin 9 setting	JP8	10-pin header
COM3 Pin 9 setting	JP10	6-pin header
COM3 RX RS-232/422/485 select	JP9	8-pin header
COM3 TX RS-422/485 select	JP11	6-pin header
COM3 RS-232/422/485 select	JP6	12-pin header

Table 4-1: Jumpers

ACT-08A-ATOM Access Control Terminal

4.7.1 Access the Jumpers

To access the jumpers, the rear panel and the aluminum cover must be removed. To remove the rear panel and the aluminum cover, please follow the steps below.

Step 1: Put the front panel of the ACT-08A-ATOM on a table.

Step 2: **Remove the rear panel.** Remove the nine retention screws (**Figure 4-1**) from the rear panel and lift the rear panel off the ACT-08A-ATOM.

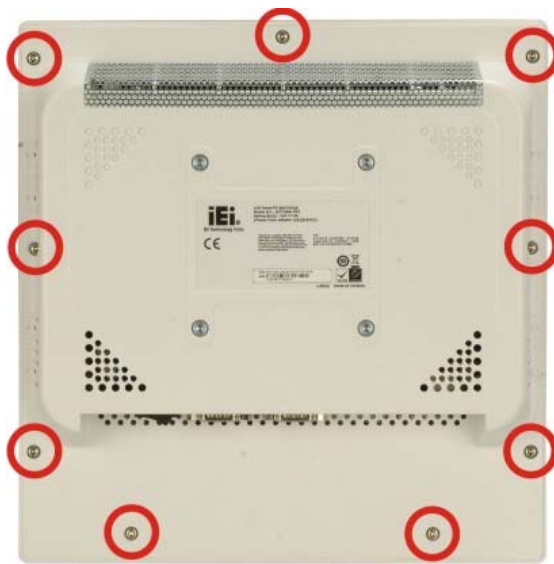


Figure 4-5: Rear Panel Retention Screws

Step 3: **Remove the aluminum cover.** The system motherboard is installed inside the aluminum chassis. Remove the nine retention screws from the aluminum chassis and lift the aluminum cover off the ACT-08A-ATOM.

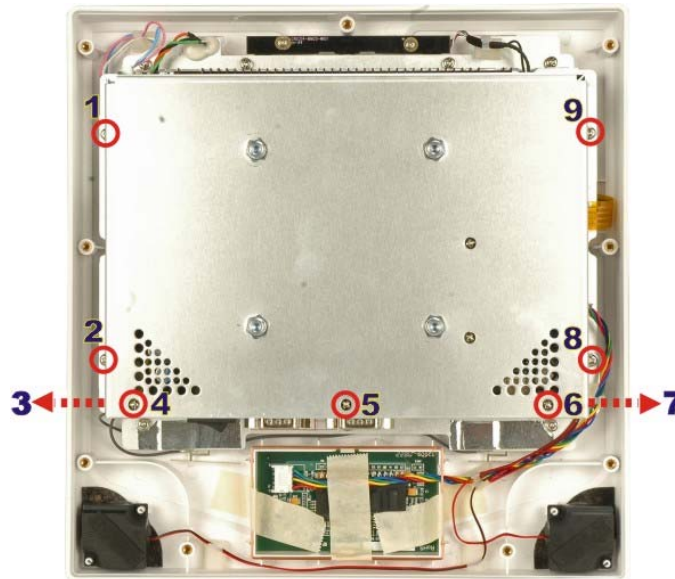


Figure 4-6: Aluminum Chassis Cover Retention Screws

4.7.2 Preconfigured Jumpers



WARNING:

Do not change the settings on the jumpers in described here. Doing so may disable or damage the system.

The following jumpers are preconfigured for the ACT-08A-ATOM. Users should no change these jumpers (**Table 4-2**).

Jumper Name	Label	Type
LVDS voltage selection	J_VLVDS1	3-pin header
Touch Screen Select	J1	4-pin header
Panel Type and Resolution	J_LCD_TYPE1	10-pin header

Table 4-2: Preconfigured Jumpers

ACT-08A-ATOM Access Control Terminal

4.7.3 Clear CMOS Jumper

Jumper Label:	J_CMOS1
Jumper Type:	2-pin header
Jumper Settings:	See Table 4-3
Jumper Location:	See Figure 4-7

If the ACT-08A-ATOM fails to boot due to improper BIOS settings, the clear CMOS jumper clears the CMOS data and resets the system BIOS information. To do this, use the jumper cap to close the pins for a few seconds then remove the jumper clip.

If the “CMOS Settings Wrong” message is displayed during the boot up process, the fault may be corrected by pressing the F1 to enter the CMOS Setup menu. Do one of the following:

- Enter the correct CMOS setting
- Load Optimal Defaults
- Load Failsafe Defaults.

After having done one of the above, save the changes and exit the CMOS Setup menu.

The clear CMOS jumper settings are shown in **Table 4-3**.

Clear CMOS	Description	
Short 1 - 2	Keep CMOS Setup	Default
Short 2 - 3	Clear CMOS Setup	

Table 4-3: Clear CMOS Jumper Settings

The location of the clear CMOS jumper is shown in **Figure 4-7** below.

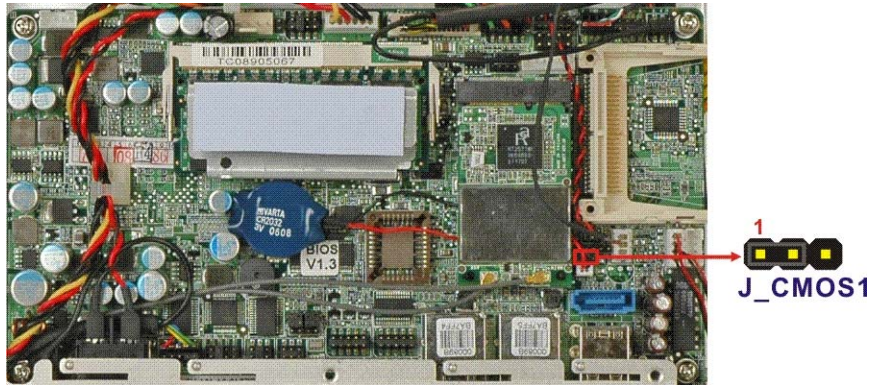


Figure 4-7: Clear CMOS Jumper

4.7.4 COM Port Pin 9 Select

Jumper Label: JP8 and JP10

Jumper Settings: See Table 4-4

Jumper Location: See Figure 4-8

Two jumpers (JP8 and JP10) configure pin 9 on COM1 and COM3 DB-9 connectors. Pin 9 on the COM1 and the COM3 DB-9 connectors can be set as the ring (RI) signal, +5 V or +12 V. The COM1 and COM3 Pin 9 Setting jumper selection options are shown in **Table 4-4** and **Table 4-5**.

JP8	Description	
Short 1-3	COM1 RI Pin use +12 V	
Short 5-7	COM1 RI Pin use +5 V	
Short 7-9	COM1 RI Pin use RI	Default

Table 4-4: COM1 Pin 9 Setting Jumper Settings

JP10	Description	
Short 1-2	COM3 RI Pin use +12 V	
Short 3-4	COM3 RI Pin use RI	Default
Short 5-6	COM3 RI Pin use +5 V	

Table 4-5: COM3 Pin 9 Setting Jumper Settings

ACT-08A-ATOM Access Control Terminal

The COM1 and COM3 Pin 9 Setting jumper locations are shown in **Figure 4-8** below.

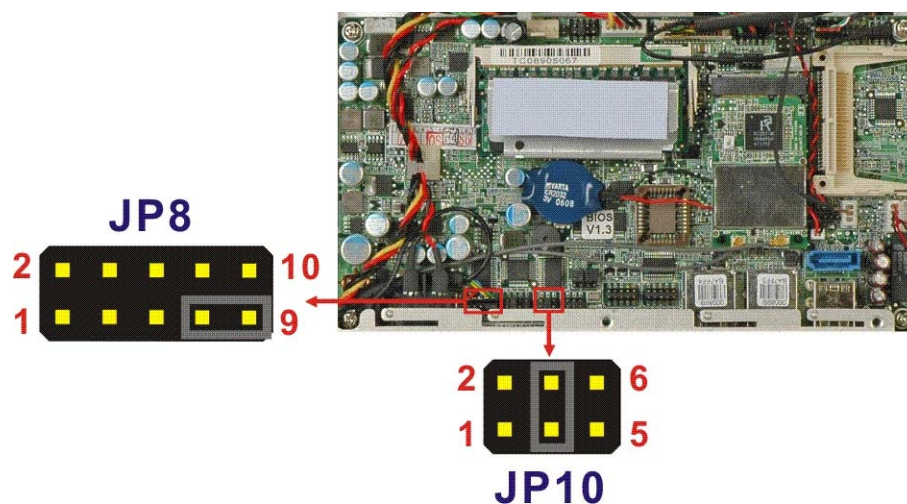


Figure 4-8: COM1 and COM3 Pin 9 Setting Jumper Locations

4.7.4.1 COM3 RS-422 and RS-485 Pinouts

The pinouts for RS-422 and RS-485 operation of external serial port COM 3 are detailed below.

COM 3	RS-422 Description
Pin 1	TX-
Pin 2	TX+
Pin 6	RX-
Pin 7	RX+

Table 4-6: RS-422 Pinouts

COM 3	RS-485 Description
Pin 1	Data-
Pin 2	Data+

Table 4-7: RS-485 Pinouts

4.7.5 COM3 RX Function Select Jumper

Jumper Label:	JP9
Jumper Type:	8-pin header
Jumper Settings:	See Table 4-8
Jumper Location:	See Figure 4-9

The COM3 RX Function Select jumper sets the communication protocol used by the RX serial communications port COM3 as RS-232, RS-422 or RS-485. The COM3 RX Function Select jumper settings are shown in **Table 4-8**.

COM3 RX Function Select	Description	
Short 3-4	RS-232	Default
Short 1-2, 5-6	RS-422	
Short 1-2, 7-8	RS-485	

Table 4-8: COM3 RX Function Select Jumper Settings

The COM3 RX Function Select jumper location is shown in **Figure 4-9**.

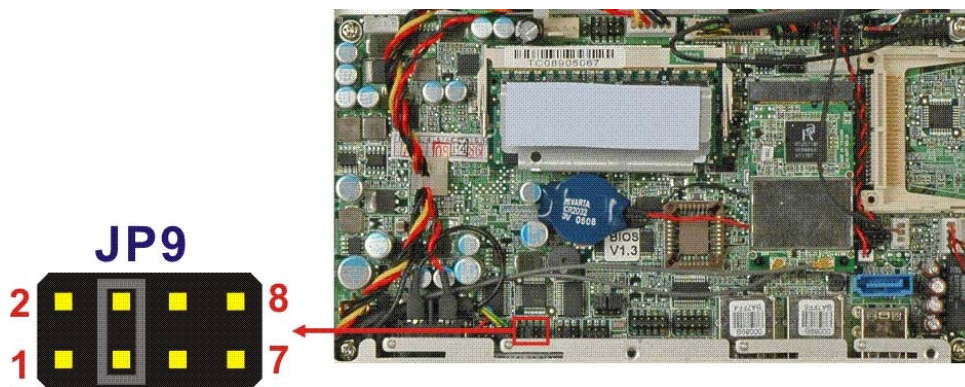


Figure 4-9: COM3 RX Function Select Jumper Location

ACT-08A-ATOM Access Control Terminal

4.7.6 COM3 TX Function Select Jumper

Jumper Label:	JP11
Jumper Type:	6-pin header
Jumper Settings:	See Table 4-9
Jumper Location:	See Figure 4-10

The COM3 TX Function Select jumper configures the TX pin on COM3 serial port connector as RS-422 as an RS-485. The COM3 TX Function Select jumper selection options are shown in **Table 4-9**.

COM3 TX Function Select	Description
Short 1 – 3	RS-422
Short 2 – 4	RS-422
Short 3 – 5	RS-485
Short 4 – 6	RS-485

Table 4-9: COM3 TX Function Select Jumper Settings

The COM3 TX Function Select jumper location is shown in **Figure 4-10** below.

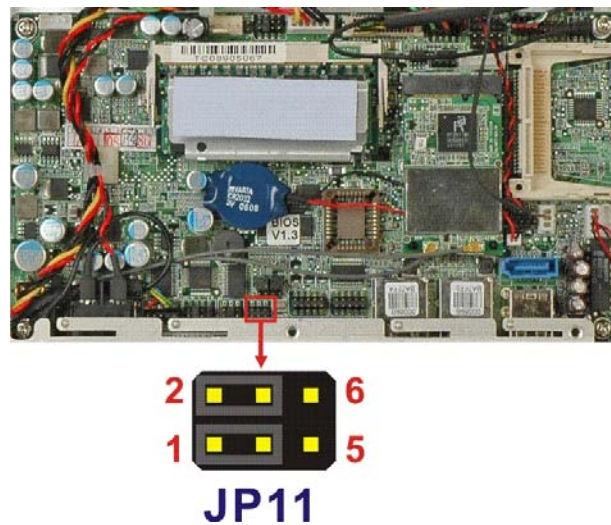


Figure 4-10: COM3 TX Function Select Jumper Pinout Locations

4.7.7 COM3 RS-232/422/485 Serial Port Select Jumper

Jumper Label:	JP6
Jumper Type:	12-pin header (four 3-pin headers combined)
Jumper Settings:	See Table 4-10
Jumper Location:	See Figure 4-11

The COM3 RS-232/422/485 Serial Port Select jumper sets the communication protocol used by the second serial communications port (COM3) as RS-232, RS-422 or RS-485. The COM3 RS-232/422/485 Serial Port Select settings are shown in **Table 4-10**.

RS-232/485 Select	Description	
Short 1-2	RS-232	Default
Short 4-5	RS-232	Default
Short 7-8	RS-232	Default
Short 10-11	RS-232	Default
Short 2-3	RS-422/485	
Short 5-6	RS-422/485	
Short 8-9	RS-422/485	
Short 11-12	RS-422/485	

Table 4-10: COM3 RS-232/422/485 Serial Port Select Jumper Settings

The COM3 RS-232/422/485 Serial Port Select jumper location is shown in **Figure 4-11**.

ACT-08A-ATOM Access Control Terminal

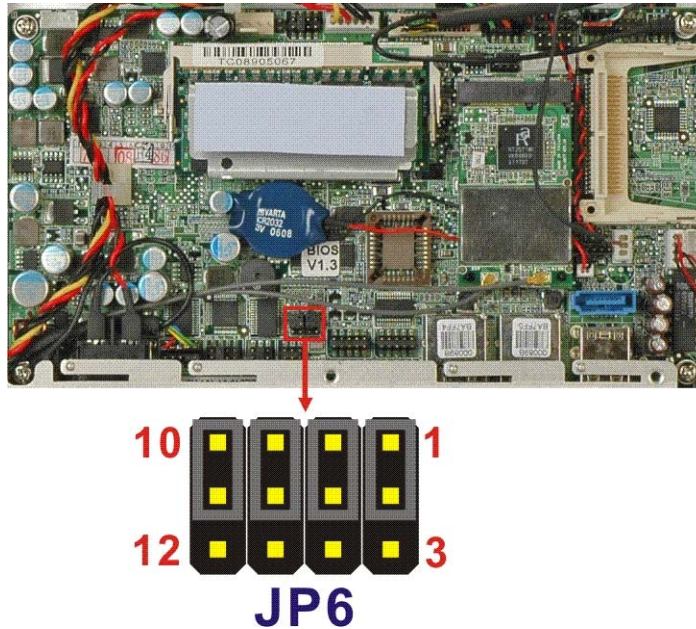


Figure 4-11: COM3 RS-232/422/485 Serial Port Select Jumper Location

4.7.8 AT/ATX Mode Selection

AT and ATX power modes can both be used on the ACT-08A-ATOM. The selection is made through an AT/ATX switch inside the left panel (**Figure 4-12**). To select AT mode or ATX mode, follow the steps below.

Step 1: Remove the rear panel. Refer to **Section 4.5**.

Step 2: Locate the AT/ATX switch on the bottom panel (**Figure 4-12**).



Figure 4-12: AT/ATX Switch

Step 3: Adjust the AT/ATX switch. The default mode is ATX mode. (**Figure 4-12**)

4.8 Mounting the System

4.8.1 Wall Mounting (Optional)

To mount the ACT-08A-ATOM onto the wall, please follow the steps below.

- Step 1:** Select the location on the wall for the wall-mounting bracket.
- Step 2:** Carefully mark the locations of the four screw holes in the bracket on the wall.
- Step 3:** Drill four pilot holes at the marked locations on the wall for the bracket retention screws.
- Step 4:** Align the wall-mounting bracket screw holes with the pilot holes.
- Step 5:** Secure the mounting-bracket to the wall by inserting the retention screws into the four pilot holes and tightening them (**Figure 4-13**).

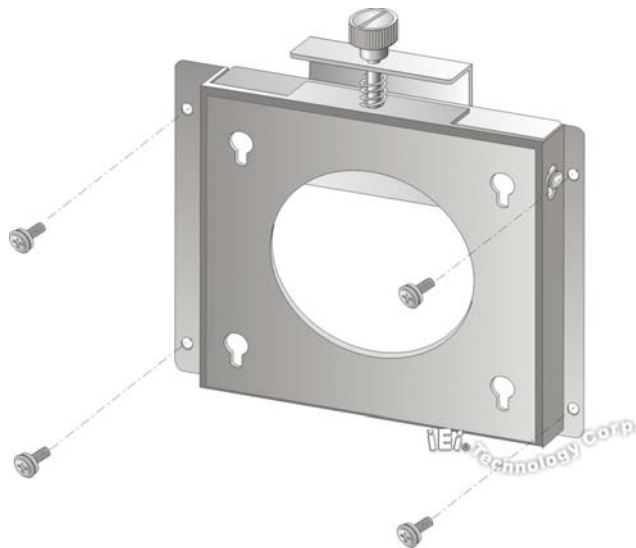


Figure 4-13: Wall-mounting Bracket

- Step 6:** Insert the four monitor mounting screws provided in the wall mounting kit into the four screw holes on the rear panel of the ACT-08A-ATOM and tighten until the screw shank is secured against the rear panel (**Figure 4-14**).
- Step 7:** Align the mounting screws on the rear panel with the mounting holes on the

ACT-08A-ATOM Access Control Terminal

bracket.

Step 8: Carefully insert the screws through the holes and gently pull the monitor downwards until the ACT-08A-ATOM rests securely in the slotted holes (**Figure 4-14**). Ensure that all four of the mounting screws fit snugly into their respective slotted holes.

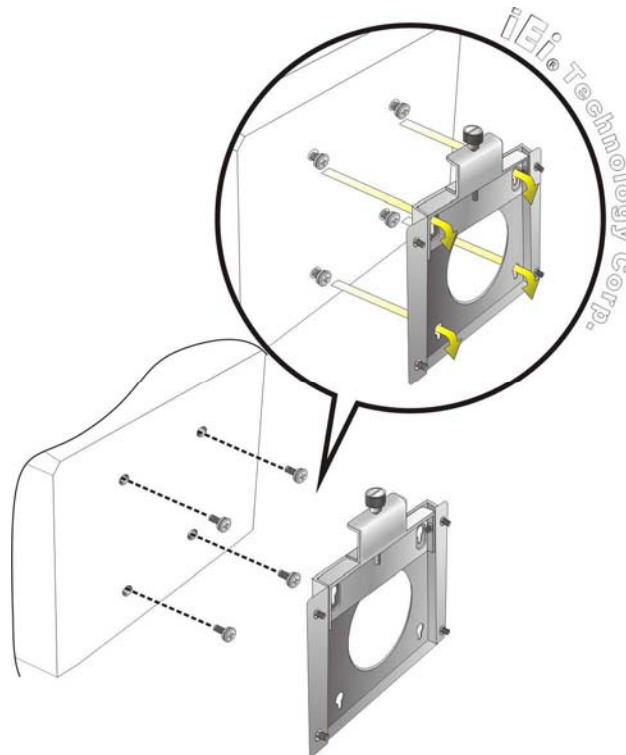


Figure 4-14: Chassis Support Screws



NOTE:

In the diagram below the bracket is already installed on the wall.

Step 9: Secure the ACT-08A-ATOM by fastening the retention screw of the wall-mounting bracket. (**Figure 4-15**).

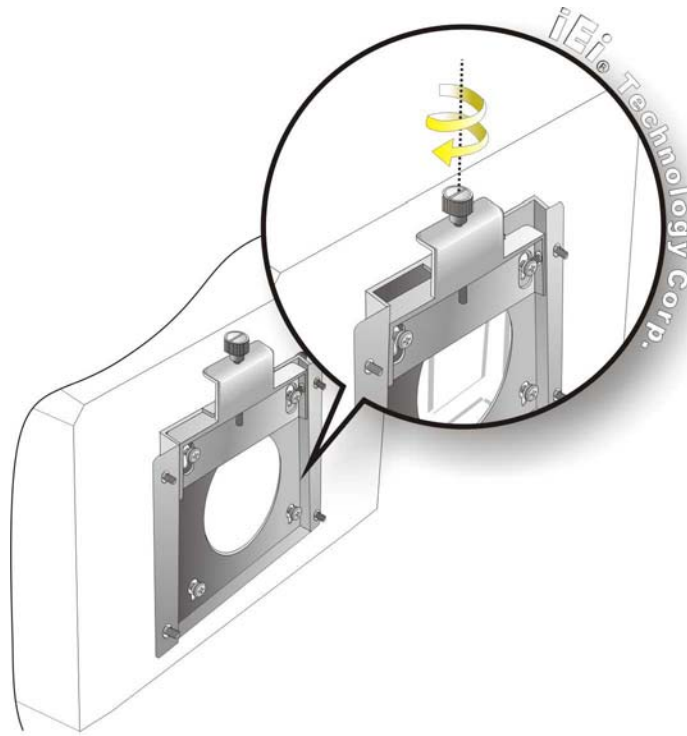


Figure 4-15: Secure the ACT-08A-ATOM

4.8.2 Panel Mounting

To mount the ACT-08A-ATOM into a panel, please follow the steps below.

- Step 1:** Select the position on the panel to mount the ACT-08A-ATOM.
- Step 2:** Cut out a section from the panel that corresponds to the rear panel dimensions of the ACT-08A-ATOM. Take care that the panel section that is cut out is smaller than the overall size of the frame that surrounds the flat panel PC but just large enough for the rear panel of the flat panel PC to fit through (see **Figure 4-16**).

ACT-08A-ATOM Access Control Terminal

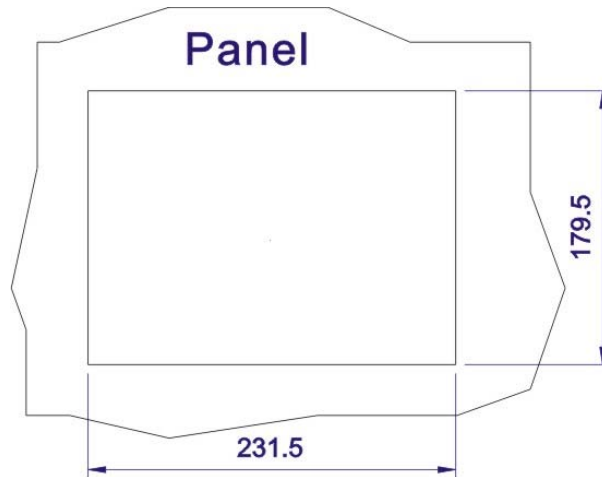


Figure 4-16: ACT-08A-ATOM Panel Opening (mm)

- Step 3:** Slide the flat panel PC through the hole until the frame is flush against the panel.
- Step 4:** Insert the panel mounting clamps into the pre-formed holes along the edges of the chassis, behind the frame.
- Step 5:** Tighten the screws that pass through the panel mounting clamps until the plastic caps at the front of all the screws are firmly secured to the panel (**Figure 4-17**).

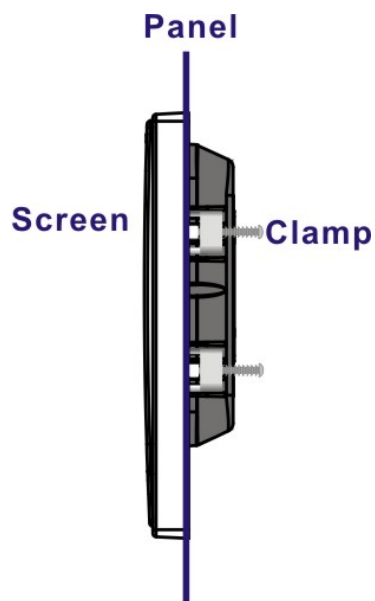


Figure 4-17: Tighten the Panel Mounting Clamp Screws

4.8.3 Arm Mounting

The ACT-08A-ATOM is VESA (Video Electronics Standards Association) compliant and can be mounted on an arm with a 75 mm interface pad. To mount the ACT-08A-ATOM on an arm, please follow the steps below.

Step 1: The arm is a separately purchased item. Please correctly mount the arm onto the surface it uses as a base. To do this, refer to the installation documentation that came with the mounting arm.



NOTE:

When purchasing the arm please ensure that it is VESA compliant and that the arm has a 75 mm interface pad. If the mounting arm is not VESA compliant it cannot be used to support the ACT-08A-ATOM.

Step 2: Once the mounting arm has been firmly attached to the surface, lift the flat panel PC onto the interface pad of the mounting arm.

Step 3: Align the retention screw holes on the mounting arm interface with those in the flat panel PC. The ACT-08A-ATOM arm mount retention screw holes are shown in **Figure 4-18**.

ACT-08A-ATOM Access Control Terminal

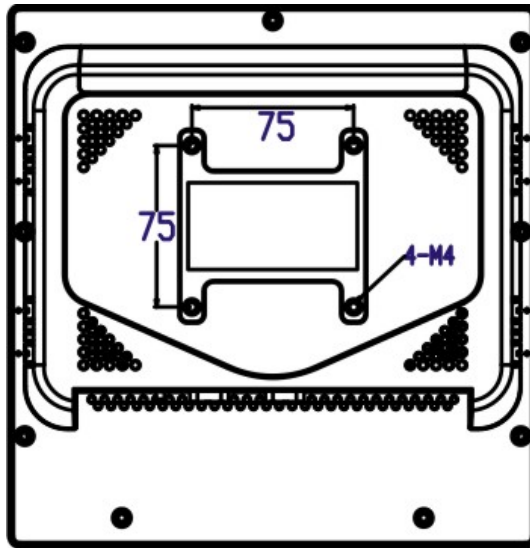


Figure 4-18: ACT-08A-ATOM Arm Mounting Retention Screw Holes

Step 4: Secure the flat panel PC to the interface pad by inserting four retention screws through the bottom of the mounting arm interface pad and into the flat panel PC.

4.8.4 Cabinet and Rack Installation

The ACT-08A-ATOM can be installed into a cabinet or rack. The installation procedures are similar to the panel mounting installation. To do this, please follow the steps below:



NOTE:

When purchasing the cabinet/rack installation bracket, make sure it is compatible with both the ACT-08A-ATOM flat panel PC and the rack/cabinet into which the ACT-08A-ATOM is installed.

Step 1: Slide the rear chassis of the ACT-08A-ATOM through the rack/cabinet bracket until the frame is flush against the front of the bracket (**Figure 4-19**).

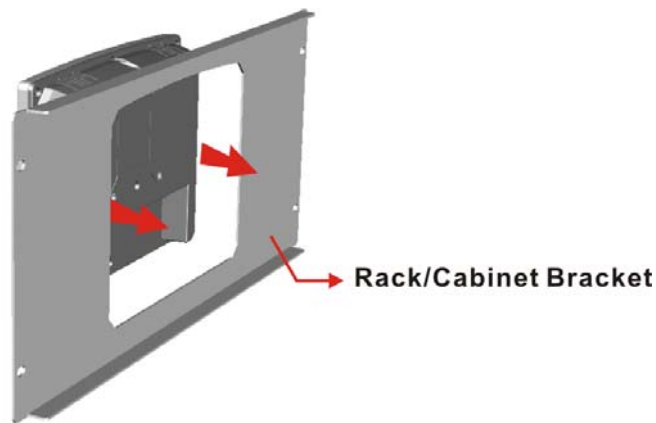


Figure 4-19: The Rack/Cabinet Bracket

Step 2: Insert the rack mounting clamps into the pre-formed holes along the edges of the flat panel PC, behind the ABS/PC plastic frame.

Step 3: Tighten the screws that pass through the rack mounting clamps until the plastic caps at the front of all the screws are firmly secured to the bracket (**Figure 4-20**).

Rack/Cabinet Bracket

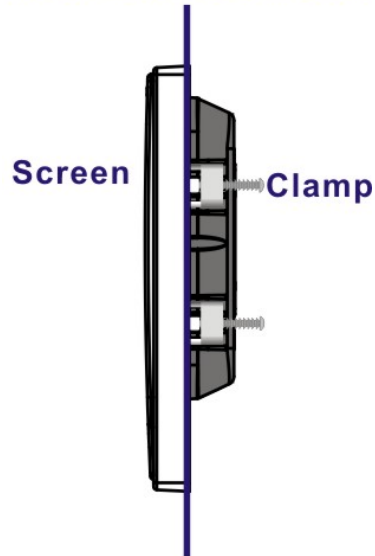


Figure 4-20: Secure the Rack/Cabinet Bracket

Step 4: Slide the flat panel PC with the attached rack/cabinet bracket into a rack or cabinet (**Figure 4-21**).

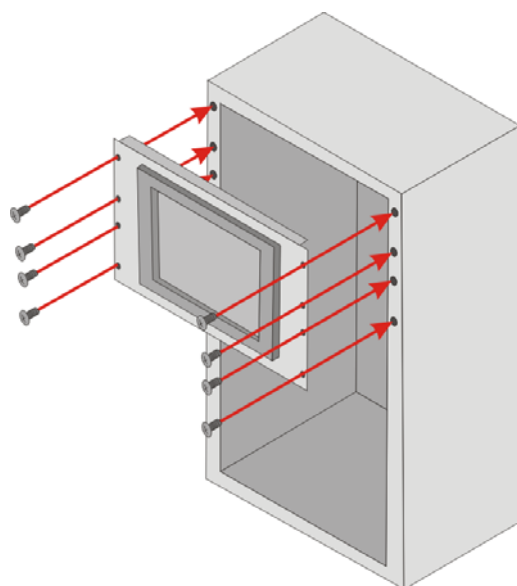


Figure 4-21: Install into a Rack/Cabinet

Step 5: Once the flat panel PC with the attached rack/cabinet bracket has been properly inserted into the rack or cabinet, secure the front of the rack/cabinet bracket to the front of the rack or cabinet (**Figure 4-21**).

4.9 Bottom Panel Connectors

4.9.1 LAN Connection

There are two external RJ-45 LAN connectors. The RJ-45 connectors enable connection to an external network. To connect a LAN cable with an RJ-45 connector, please follow the instructions below.

Step 1: **Locate the RJ-45 connectors** on the bottom panel of the ACT-08A-ATOM.

Step 2: **Align the connectors.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the bottom panel of the ACT-08A-ATOM. See **Figure 4-22**.

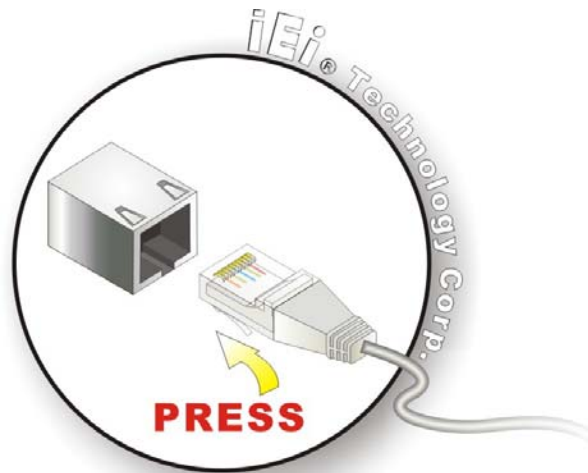


Figure 4-22: LAN Connection

Step 3: Insert the LAN cable RJ-45 connector. Once aligned, gently insert the LAN cable RJ-45 connector into the onboard RJ-45 connector.

4.9.2 Serial Device Connection

The ACT-08A-ATOM has two male DB-9 connectors on the bottom panel for serial devices to be connected. Follow the steps below to connect a serial device to the ACT-08A-ATOM POS system.

Step 1: Locate the DB-9 connector. The location of the DB-9 connector is shown in Chapter 2.

Step 2: Insert the serial connector. Insert the DB-9 connector of a serial device into the DB-9 connector on the bottom panel. See **Figure 4-23**.

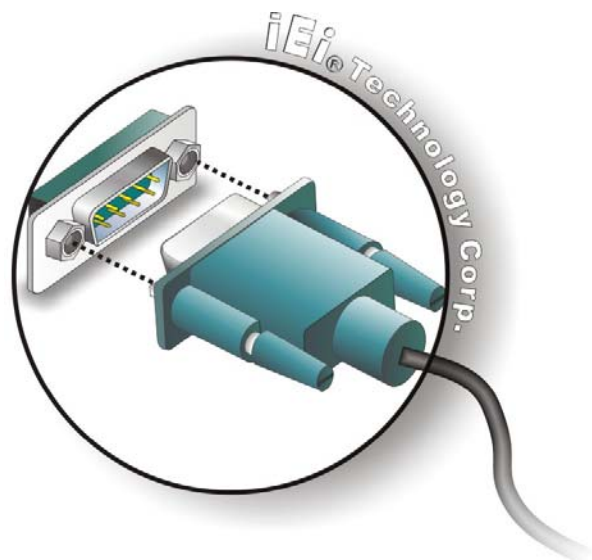


Figure 4-23: Serial Device Connector

Step 3: Secure the connector. Secure the serial device connector to the external interface by tightening the two retention screws on either side of the connector.

4.9.3 USB Device Connection

There are four external USB 2.0 connectors. All connectors are perpendicular to the ACT-08A-ATOM. To connect a USB 2.0 or USB 1.1 device, please follow the instructions below.

Step 1: Located the USB connectors. The locations of the USB connectors are shown in **Chapter 2**.

Step 2: Align the connectors. Align the USB device connector with one of the connectors on the bottom panel. See **Figure 4-24**.

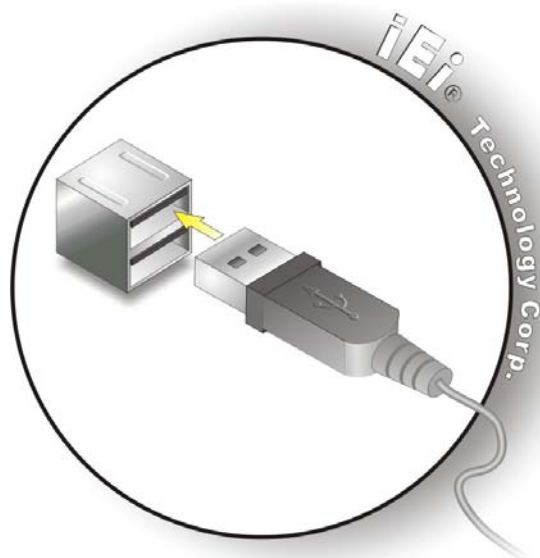


Figure 4-24: USB Device Connection

Step 3: **Insert the device connector.** Once aligned, gently insert the USB device connector into the onboard connector.

Chapter

5

RFID Reader

5.1 Introduction

IEI provides a RFID tool (RF320) to configure Mifare cards and EM cards. The following sections describe how to install the RF320 and how to use RF320 to configure Mifare cards and EM cards.

5.2 Installation

The RF320 must be installed in the ACT-08A-ATOM from the utility CD in the package before using it to configure the RFID cards. To install the RF320, please follow the steps below. The following example is based on the Windows® XP environment.

Step 1: Run the **RF-320 setup V1.3.2.exe** file from the utility CD.

Step 2: The **InstallShield Wizard** is prepared to guide the user through the rest of the process. Once initialized, the **InstallShield Wizard** welcome screen appears (Figure 5-1).

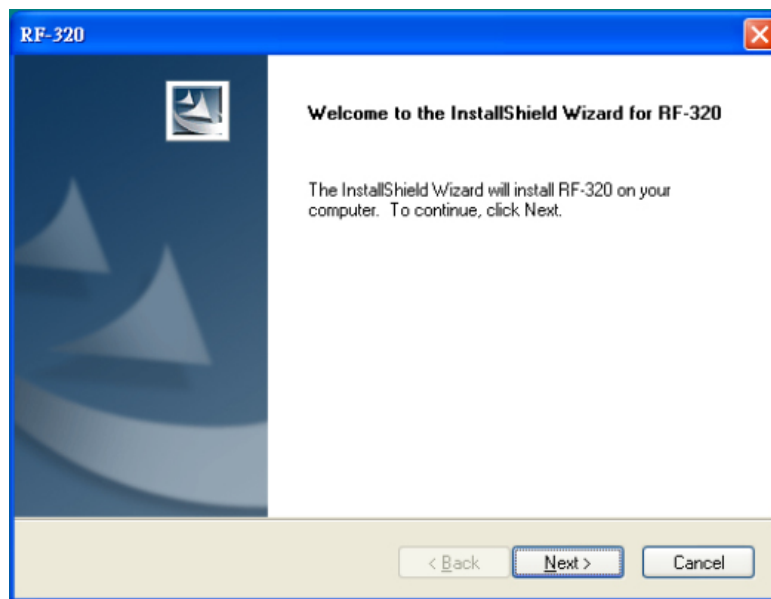


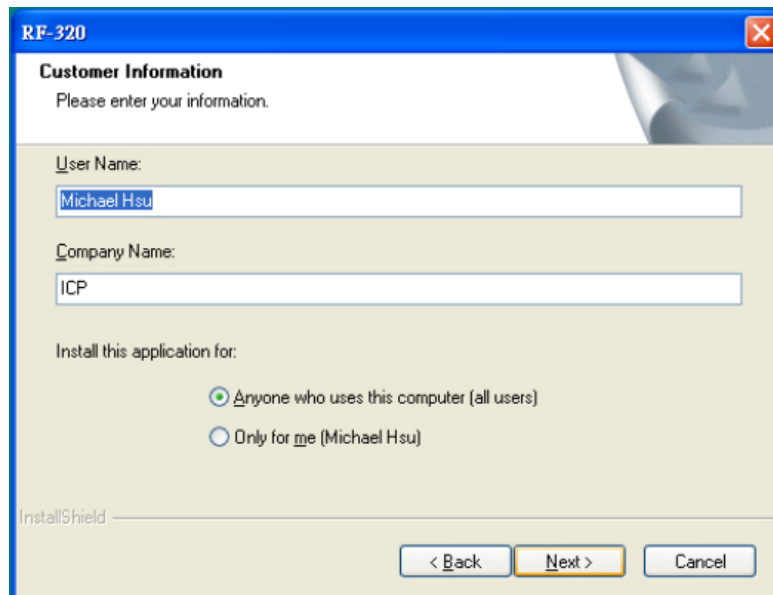
Figure 5-1: InstallShield Wizard Welcome Screen

Step 3: Click **NEXT** to continue the installation.

Step 4: The **Customer Information** screen shown in Figure 5-2. Enter a user name and

ACT-08A-ATOM Access Control Terminal

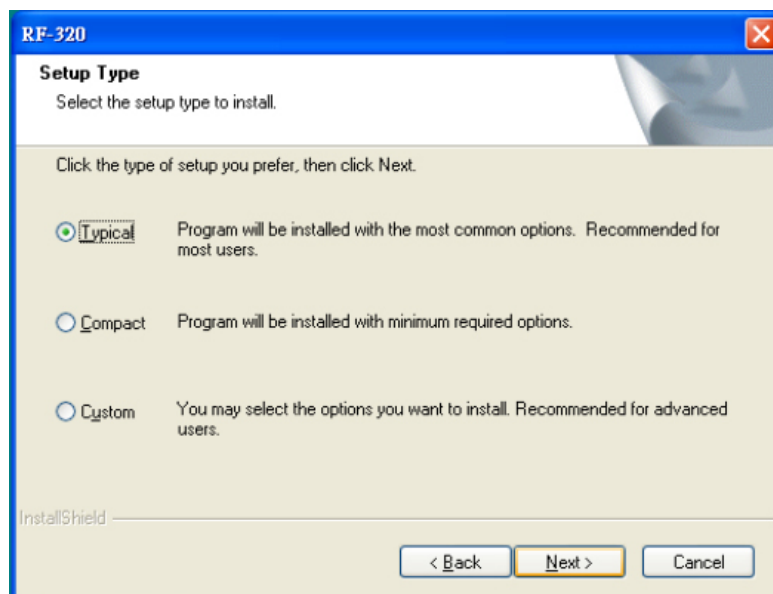
a company name. Click **NEXT** to continue the installation.



The screenshot shows a Windows-style dialog box titled "RF-320". The main heading is "Customer Information" with the instruction "Please enter your information." Below this, there are two text input fields. The first is labeled "User Name:" and contains the text "Michael Hsu". The second is labeled "Company Name:" and contains the text "ICP". Below the input fields, there is a section titled "Install this application for:" with two radio button options. The first option, "Anyone who uses this computer (all users)", is selected. The second option is "Only for me (Michael Hsu)". At the bottom of the dialog, there are three buttons: "< Back", "Next >", and "Cancel". The "Next >" button is highlighted with a yellow border. The "InstallShield" logo is visible in the bottom left corner of the dialog area.

Figure 5-2: Customer Information Screen

Step 5: At this stage in Figure 5-3 appears. Please choose the setup type. Click **NEXT** to continue the installation.



The screenshot shows a Windows-style dialog box titled "RF-320". The main heading is "Setup Type" with the instruction "Select the setup type to install." Below this, there is a text prompt: "Click the type of setup you prefer, then click Next." There are three radio button options. The first option, "Typical", is selected and has a description: "Program will be installed with the most common options. Recommended for most users." The second option is "Compact" with the description: "Program will be installed with minimum required options." The third option is "Custom" with the description: "You may select the options you want to install. Recommended for advanced users." At the bottom of the dialog, there are three buttons: "< Back", "Next >", and "Cancel". The "Next >" button is highlighted with a yellow border. The "InstallShield" logo is visible in the bottom left corner of the dialog area.

Figure 5-3: Setup Type Selection Screen

Step 6: The window shows the current settings for installing the RF320 (Figure 5-4).

Click **NEXT** to confirm the settings and continue the installation.

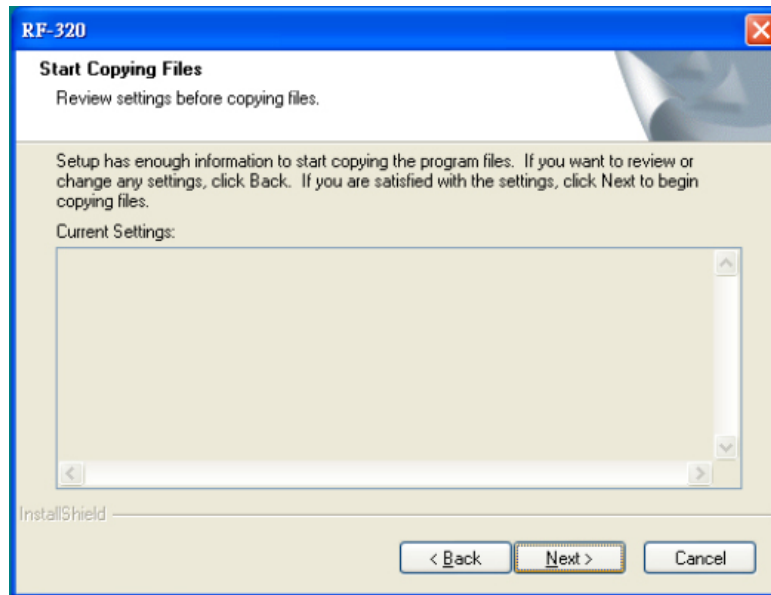
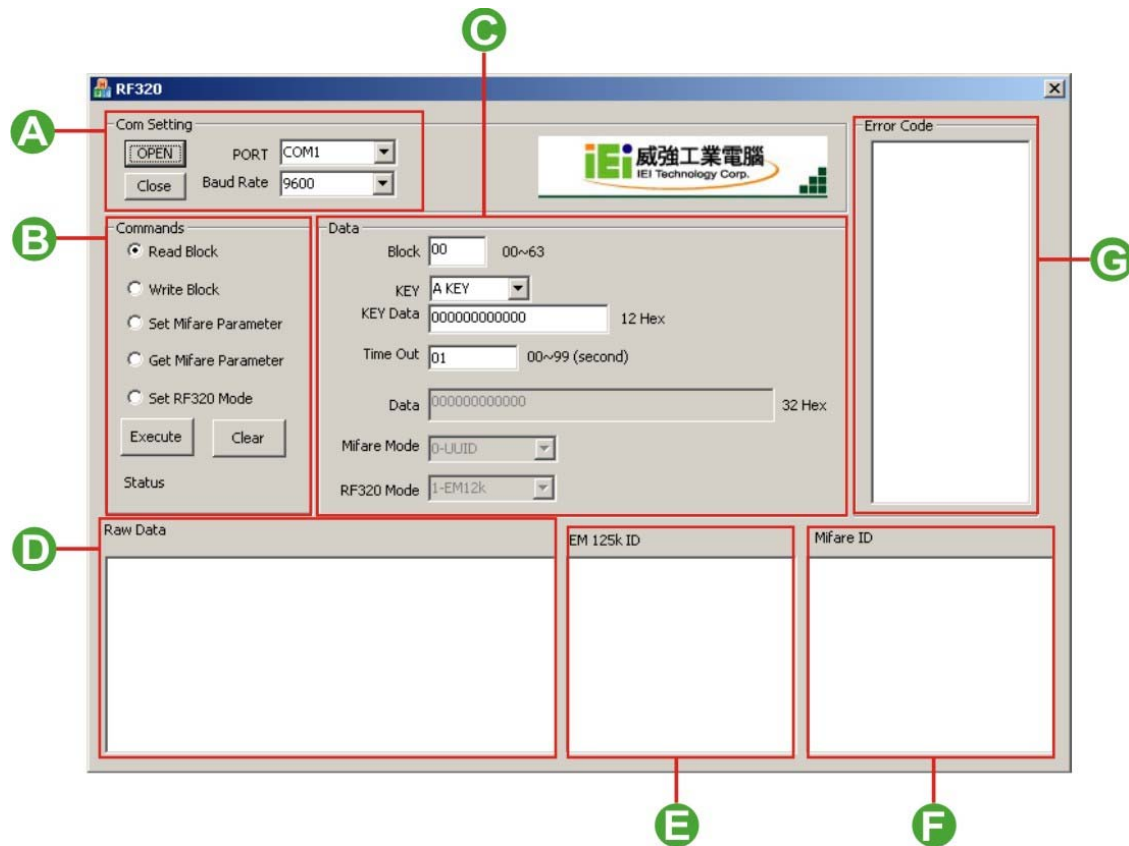


Figure 5-4: Current Settings Confirmation Screen

Step 7: Click **FINISH** to exit.

Step 8: To launch the RF320, click Start menu → Program File → IEI → RF320.

5.3 RF320 Interface Overview



A - COM Port Settings and Activation Area

Allows the user to select the serial port used by the ACT-08A-ATOM to communicate with the RFID reader module.

B - Commands Area

Shows various request options for user to select.

C - Data Input Area

The data input area is where the user enters block number, key, key data, and other information required by certain commands.

D - Raw Data Display Area

Shows all communication logs and responses of the executed commands.

E - EM Card ID Display Area

Displays the EM card ID when the EM card is detected.

F - Mifare Card ID Display Area

Displays the Mifare card ID when the Mifare card is detected.

G Error Code Display Area

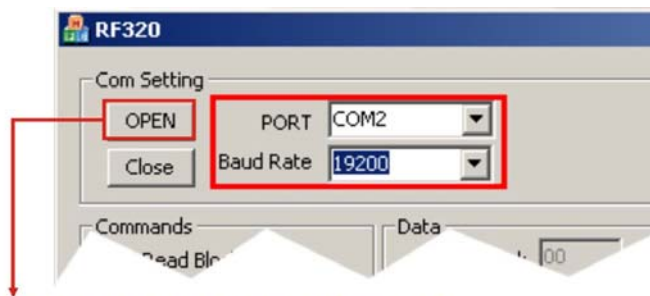
Shows the error message when an error occurs.

5.4 Serial Port (COM) Settings

After launching the RF320 RFID tool, the COM port settings have to be set correctly to enable the communication with the built-in RFID reader. Please follow the information below to setup the COM port settings.

Model	COM Port	Baud Rate
ACT-08A-ATOM	COM 2	19200

Table 5-1: RF320 COM Port Settings



Click to open the selected COM port

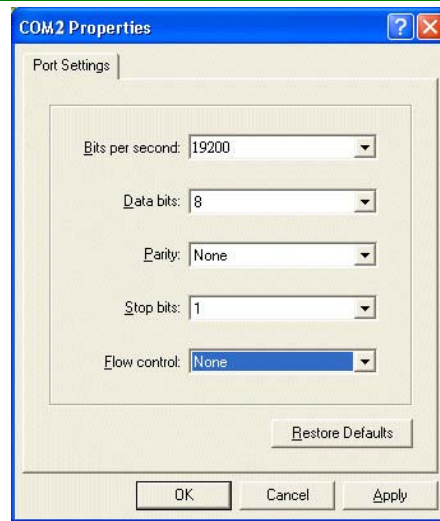
Figure 5-5: RF320 COM Port Settings



NOTE:

If the Hyper Terminal is used for communication, please setup the port properties as shown below.

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Bits per second: 19200

Data bits: 8

Parity: None

Stop bits: 1

Flow control: None

5.5 RF320 Commands

The RF320 provides five commands, including:

- **Read Block:** read the block data from the Mifare/EM card
- **Write Block:** write the block data into the Mifare/EM card
- **Set Mifare Parameter**
- **Get Mifare Parameter**
- **Set RF320 Mode**

The following sections describe how to use these commands.

5.5.1 Read Block

To read the block data from a Mifare card, please follow the steps below.

Step 1: Select **Read Block** in the command area (**Figure 5-6**).

Step 2: Configure the data, including block, key, key data and time out (**Figure 5-6**).

Step 3: Click the **Execute** button to execute the command through the selected serial port (**Figure 5-6**). The raw data of this command shows in the Raw Data area in the format listed in **Table 5-2** and **Table 5-3**.

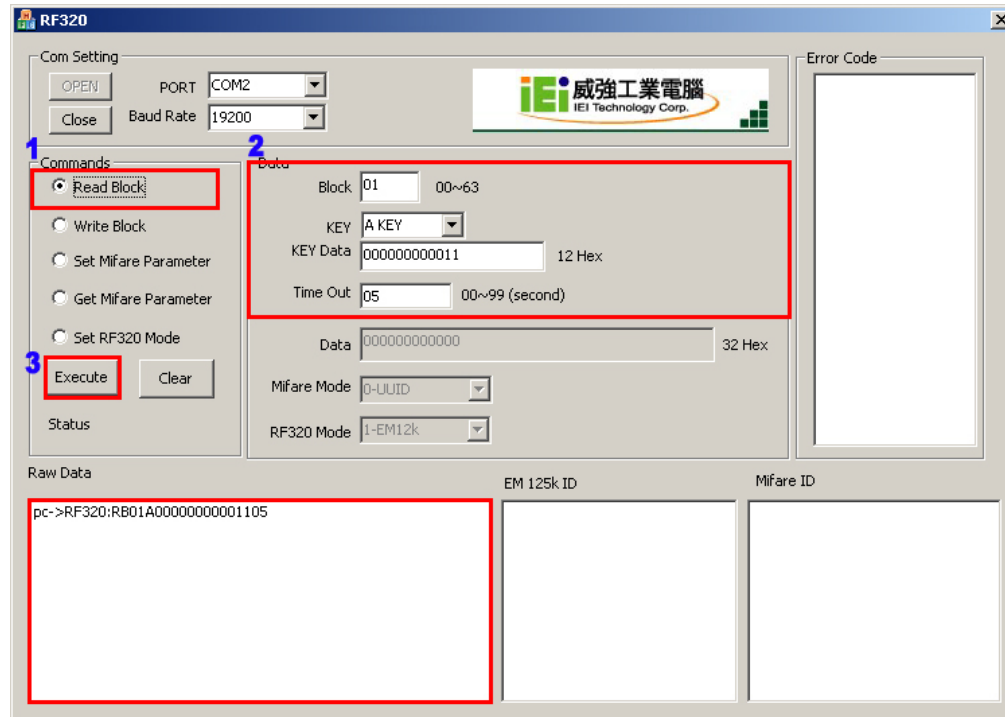


Figure 5-6: Read Block

Field	Command	Block	KEY	KEY Data	Time Out	End
Digit	2	2	1	12	2	1
Data	RB	00~63	A/B	000000000000 { (Hex) FFFFFFFFFFFF	00~99 (Second)	CR (0x0d)

Table 5-2: Read Block Raw Data Format

Status (2 digits)	Block Data (32 digits)	END (2 digits)
OK	32 bits (Hex)	CR,LF (0x0d,0x0a)
ER	Error Code (3 digits)	CR,LF (0x0d,0x0a)

Table 5-3: Read Block Response Format

5.5.2 Write Block

To write the block data into a Mifare card, please follow the steps below.

- Step 1:** Select **Write Block** in the command area (**Figure 5-7**).
- Step 2:** Configure the data, including block, key, key data, time out and data (**Figure 5-7**).
- Step 3:** Click the **Execute** button to execute the command through the selected serial port (**Figure 5-7**). The raw data of this command shows in the Raw Data area in the format listed in **Table 5-4** and **Table 5-5**.

[illegible]

Figure 5-7: Write Block

Field	Command	Block	KEY	KEY Data	Time Out	Block Data	End
Digit	2	2	1	12	2	32	1
Data	WB	00~63	A/B	000000000000 { (Hex) FFFFFFFFFFFF	00~99 (Second)	32 digits Hex	CR (0x0d)

Table 5-4: Write Block Raw Data Format

Status (2 digits)	Block Data	END (2 digits)
OK	Null	CR,LF (0x0d,0x0a)
ER	Error Code (3 digits)	CR,LF (0x0d,0x0a)

Table 5-5: Write Block Response Format

5.5.3 Set Mifare Parameter

To set parameter of a Mifare card reader, please follow the steps below.

Step 1: Select **Set Mifare Parameter** in the command area (**Figure 5-8**).

Step 2: Select a Mifare mode.

- 0-UUID: read serial number only.
- 1-UUID & KEY A: read serial number and use "KEY A" to read "Block" data".
- 2-UUID & KEY B: read serial number and use "KEY B" to read "Block data".

Step 3: Configure the block number, and key data (**Figure 5-8**).

Step 4: Click the **Execute** button to execute the command through the selected serial port (**Figure 5-8**). The raw data of this command shows in the Raw Data area in the format listed in **Table 5-6** and **Table 5-7**.

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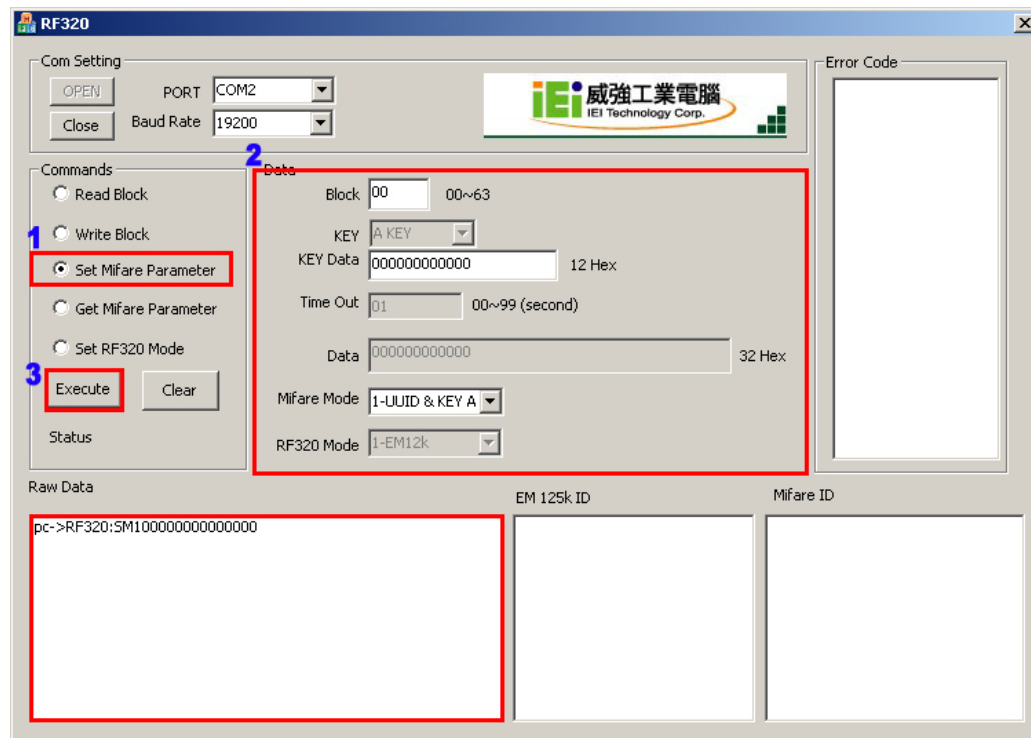


Figure 5-8: Set Mifare Parameter

Field	Command	Access Mode	Block	KEY Data	End
Digit	2	1	2	12	1
Data	SM	0~2	00~63	000000000000 { (Hex) FFFFFFFFFFFF	CR (0x0d)

Table 5-6: Set Mifare Parameter Raw Data Format

Status (2 digits)	Block Data	END (2 digits)
OK	Null	CR,LF (0x0d,0x0a)
ER	Error Code (3 digits)	CR,LF (0x0d,0x0a)

Table 5-7: Set Mifare Parameter Response Format

5.5.4 Get Mifare Parameter

To read the parameter of a Mifare card reader, please follow the steps below.

Step 1: Select **Get Mifare Parameter** in the command area (**Figure 5-9**).

Step 2: Click the **Execute** button to execute the command through the selected serial port (**Figure 5-9**). The raw data of this command shows in the Raw Data area in the format listed in **Table 5-8** and **Table 5-9**.

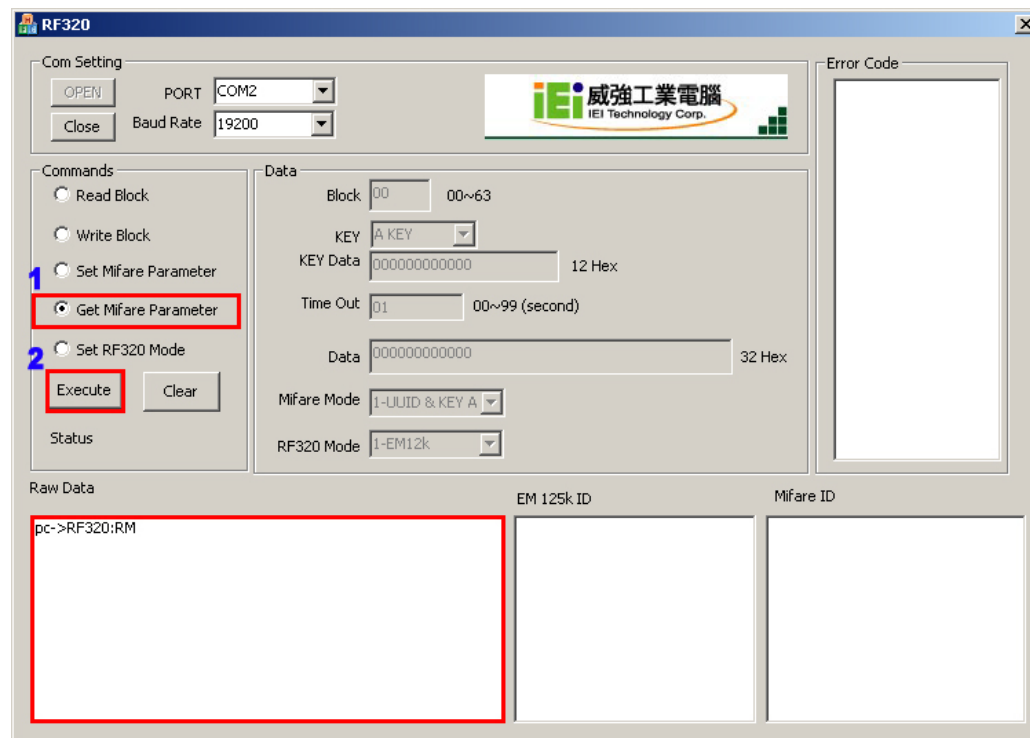


Figure 5-9: Get Mifare Parameter

Field	Command	End
Digit	2	1
Data	RM	CR (0x0d)

Table 5-8: Get Mifare Parameter Raw Data Format

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Status (2 digits)	Block Data	END (2 digits)
OK	Access mode (1 digit) + Block (2 digits) + Mode (1 digit)	CR,LF (0x0d,0x0a)
ER	Error Code (3 digits)	CR,LF (0x0d,0x0a)

Table 5-9: Get Mifare Parameter Response Format

5.5.5 Set RF320 Mode

The Set RF320 Mode command is to set the type of RFID card for the RFID reader to detect. To set the type of RFID card, please follow the steps below.

Step 1: Select **Set RF320 Mode** in the command area (**Figure 5-10**).

Step 2: Select a RF320 mode.

- 1-EM12K: detect EM cards only.
- 2-Mifare: detect Mifare cards only.
- 3-EM and Mifare: detect both EM and Mifare cards.

Step 3: Click the **Execute** button to execute the command through the selected serial port (**Figure 5-10**). The raw data of this command shows in the Raw Data area in the format listed in **Table 5-10** and **Table 5-11**.

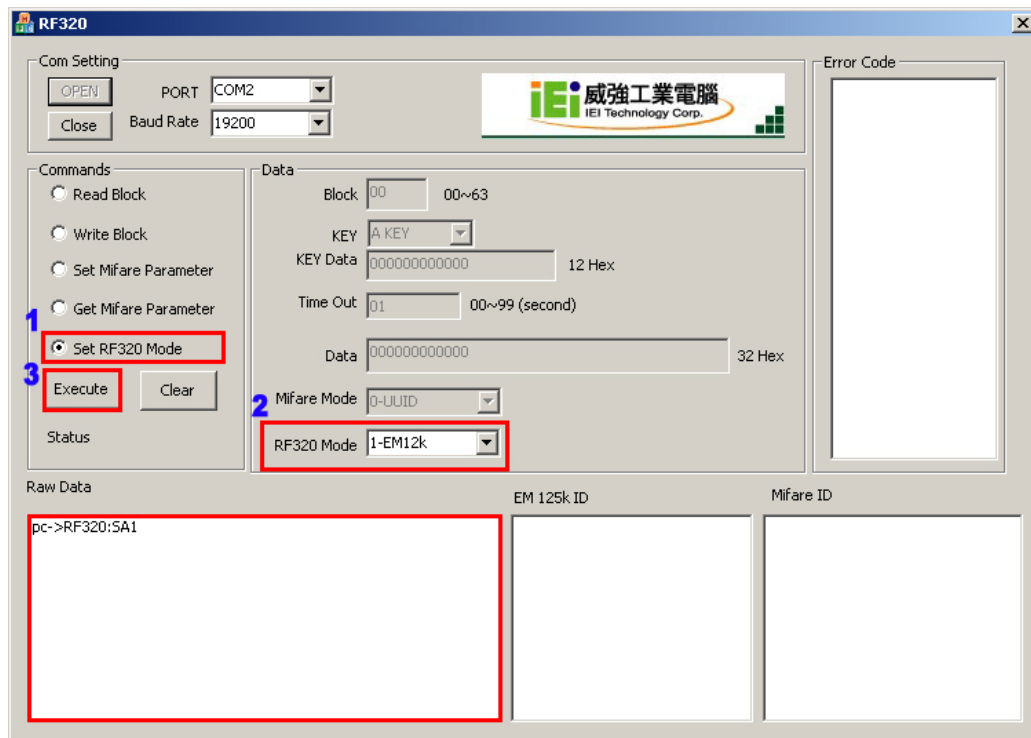


Figure 5-10: Set RF-320 Mode

Field	Command	Mode	End
Digit	2	1	1
Data	SA	1~3	CR (0x0d)

Table 5-10: Set RF320 Mode Raw Data Format

Status (2 digits)	Block Data	END (2 digits)
OK	Null	CR,LF (0x0d,0x0a)
ER	Error Code (3 digits)	CR,LF (0x0d,0x0a)

Table 5-11: Set RF320 Mode Response Format

Chapter

6

System Maintenance

6.1 System Maintenance Introduction

If the components of the ACT-08A-ATOM fail they must be replaced. Components that can be replaced include:

- CF Module
- Wireless LAN module
- SO-DIMM module

Please contact the system reseller or vendor to purchase the replacement parts. Back cover removal instructions and component replacement for the ACT-08A-ATOM are described below.

6.2 Anti-static Precautions



WARNING:

Failure to take ESD precautions during the maintenance of the ACT-08A-ATOM may result in permanent damage to the ACT-08A-ATOM and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the ACT-08A-ATOM. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the ACT-08A-ATOM is accessed internally, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband:*** - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding:*** - Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad:*** When configuring the ACT-08A-ATOM, place it on an anti-static pad. This reduces the possibility of ESD damaging the

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ACT-08A-ATOM.

- **Only handle the edges of the PCB:** When handling the PCB, hold the PCB by the edges.

6.3 Turn off the Power



WARNING:

Failing to turn off the system before opening it can cause permanent damage to the system and serious or fatal injury to the user.

Before any maintenance procedures are carried out on the system, make sure the system is turned off.

6.4 Removing the Rear Panel

To access the ACT-08A-ATOM internally, the rear panel must be removed. To remove the rear panel, please follow the steps below.

Step 1: Follow all anti-static procedures. See **Section 6.2**.

Step 2: Turn off the power. See **Section 6.3**.

Step 3: Put the front panel of the ACT-08A-ATOM on a table.

Step 4: Remove the rear panel. Remove the nine retention screws (**Figure 6-1**) from the rear panel and lift the rear panel off the ACT-08A-ATOM.



Figure 6-1: Rear Panel Retention Screws

Step 5: Remove the aluminum cover. The system motherboard is installed inside the aluminum chassis. Remove the nine retention screws (**Figure 6-2**) from the aluminum chassis and lift the aluminum cover off the ACT-08A-ATOM.

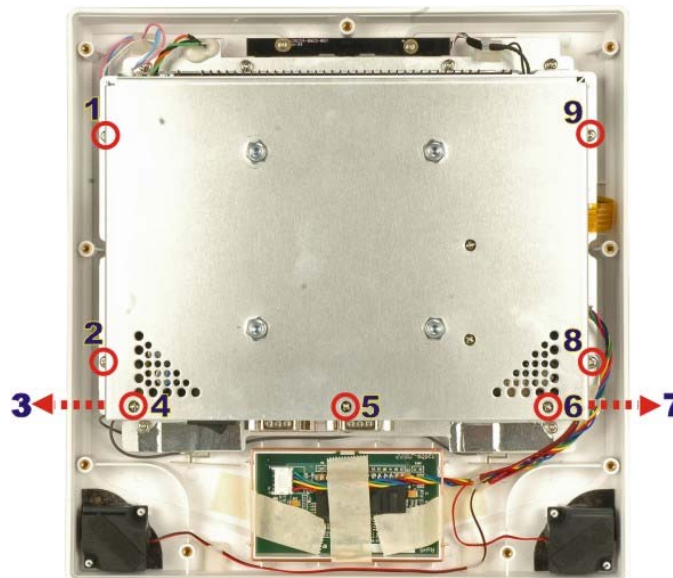


Figure 6-2: Aluminum Chassis Cover Retention Screws

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6.5 Replacing Components

6.5.1 CF Card Replacement

The ACT-08A-ATOM has one CF Type II slot. To replace the CF card, follow the instructions below.

Step 1: Follow all anti-static procedures. See **Section 6.2**.

Step 2: Turn off the power. See **Section 6.3**.

Step 3: Follow the steps described in **Section 4.6** to replace the CF card.

6.5.2 SO-DIMM Module Replacement



WARNING:

Using incorrectly specified SO-DIMM may cause permanently damage the ACT-08A-ATOM. Please make sure the purchased SO-DIMM complies with the memory specifications of the ACT-08A-ATOM.

To replace the SO-DIMM module, please follow the steps below.

Step 1: Follow all anti-static procedures. See **Section 6.2**.

Step 2: Turn off the power. See **Section 6.3**.

Step 3: Remove the back panel. See **Section 6.4**.

Step 4: Locate the SO-DIMM module. See **Figure 6-3**.

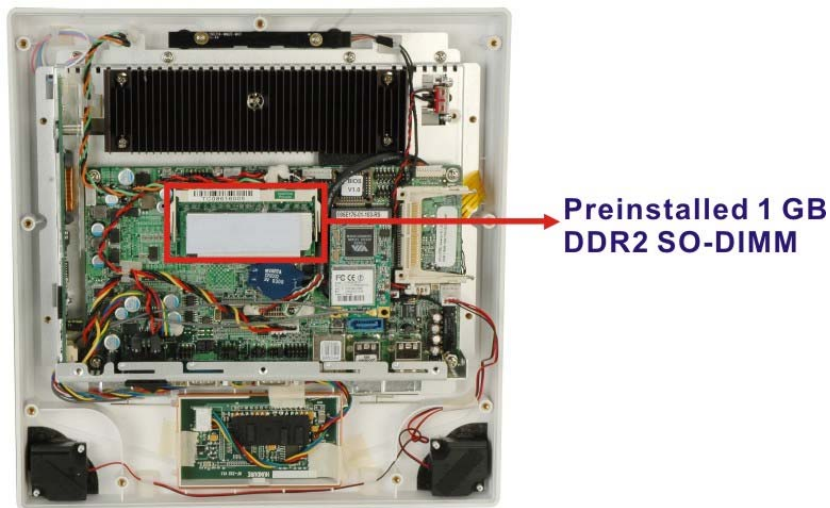


Figure 6-3: SO-DIMM Socket Location

- Step 5:** Open the SO-DIMM socket arms. Gently pull the arms of the SO-DIMM socket out and remove the old SO-DIMM.
- Step 6:** Align the SO-DIMM with the socket. The SO-DIMM must be oriented in such a way that the notch in the middle of the SO-DIMM must be aligned with the plastic bridge in the socket.
- Step 7:** Insert the SO-DIMM. Push the SO-DIMM chip into the socket at an angle (Figure 6-4).

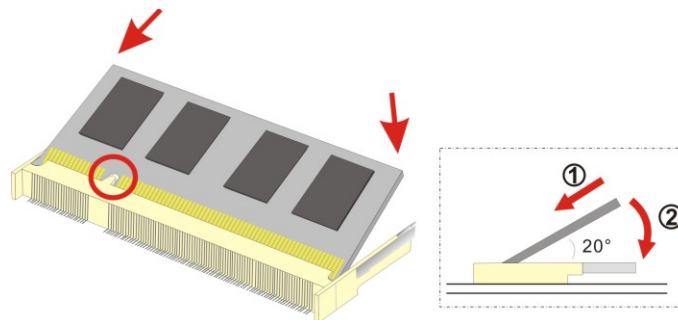


Figure 6-4: SO-DIMM Installation

- Step 8:** Secure the SO-DIMM. Push the SO-DIMM down. The clip into place and secure the SO-DIMM in the socket.

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6.5.3 Wireless Module Replacement

To replace the wireless module, please follow the steps below.

Step 1: Follow all anti-static procedures. See **Section 6.2**.

Step 2: Turn off the power. See **Section 6.3**.

Step 3: Remove the back panel. See **Section 6.4**.

Step 4: Locate the wireless module. The wireless module is located below the CPU heat sink. See **Figure 6-5**.

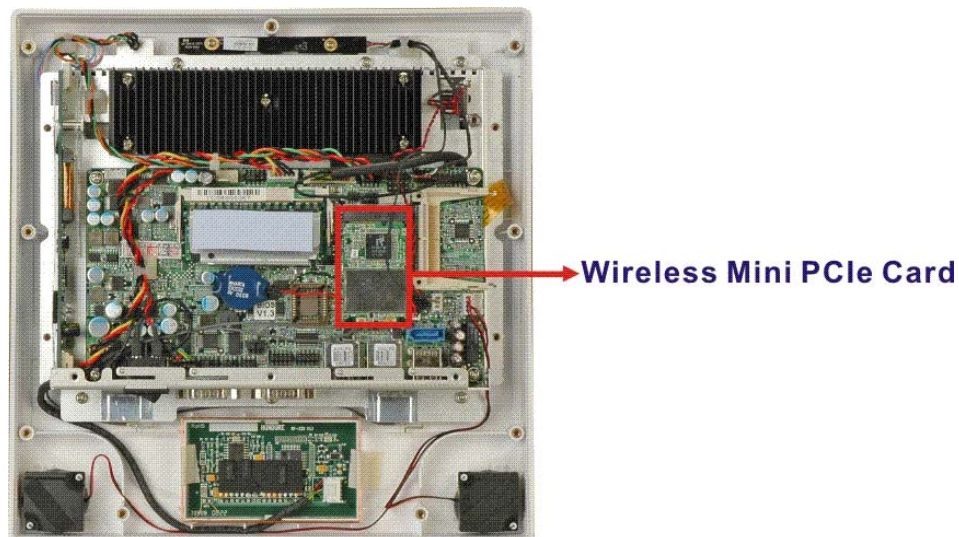


Figure 6-5: Wireless Module Location

Step 5: Open the PCIe Mini card socket clips. The PCIe Mini card socket has two clips that secure the PCIe Mini wireless module into the socket. Before the wireless module can be removed from the socket, the clips must be opened.

Step 6: Remove the wireless module. Once the two clips of the PCIe Mini card socket are open, remove the wireless module from the socket.

Step 7: Align the new wireless module with the PCIe Mini card socket. The wireless module must be oriented in such a way that the notch in the wireless module must be aligned with the plastic bridge in the socket.

Step 8: Insert the wireless module. Push the wireless module into the socket at an angle.

Step 9: Secure the wireless module. Push the wireless module down until the two clips into place, securing the card in place.

6.5.4 Motherboard Replacement

A user cannot replace a motherboard. If the motherboard fails it must be shipped back to IEI to be replaced. If the system motherboard has failed, please contact the system vendor, reseller or an IEI sales person directly.

Chapter

7

AMI BIOS Setup

7.1 Introduction

A licensed copy of AMI BIOS is preprogrammed into the ROM BIOS. The BIOS setup program allows users to modify the basic system configuration. This chapter describes how to access the BIOS setup program and the configuration options that may be changed.

7.1.1 Starting Setup

The AMI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. Press the **DELETE** key as soon as the system is turned on or
2. Press the **DELETE** key when the “**Press Del to enter SETUP**” message appears on the screen.

If the message disappears before the **DELETE** key is pressed, restart the computer and try again.

7.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, use the PageUp and PageDown keys to change entries, press **F1** for help and press **Esc** to quit. Navigation keys are shown in.

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
Esc key	Main Menu – Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
Page Up key	Increase the numeric value or make changes
Page Dn key	Decrease the numeric value or make changes

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F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 /F3 key	Change color from total 16 colors. F2 to select color forward.
F10 key	Save all the CMOS changes, only for Main Menu

Table 7-1: BIOS Navigation Keys

7.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press **Esc** or the **F1** key again.

7.1.4 Unable to Reboot After Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults. Use the jumper described in **Chapter 5**.

7.1.5 BIOS Menu Bar

The **menu bar** on top of the BIOS screen has the following main items:

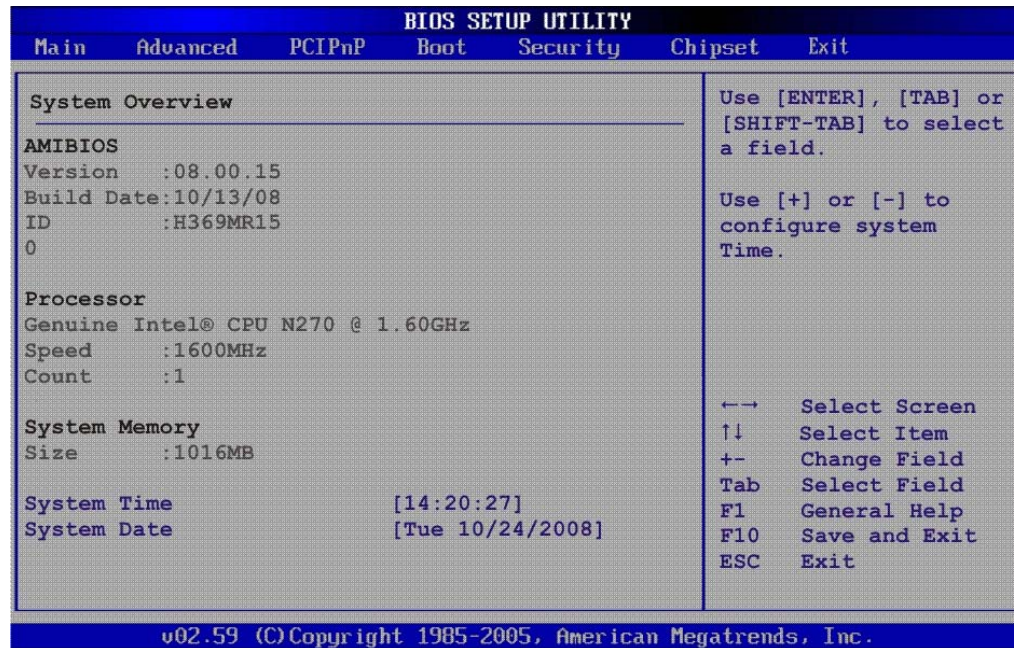
- **Main** Changes the basic system configuration.
- **Advanced** Changes the advanced system settings.
- **PCIPnP** Changes the advanced PCI/PnP Settings
- **Boot** Changes the system boot configuration.
- **Security** Sets User and Supervisor Passwords.
- **Chipset** Changes the chipset settings.
- **Exit** Selects exit options and loads default settings

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

7.2 Main

The **Main** BIOS menu (**BIOS Menu 1**) appears when the **BIOS Setup** program is entered.

The **Main** menu gives an overview of the basic system information.



BIOS Menu 1: Main

→ System Overview

The **System Overview** lists a brief summary of different system components. The fields in **System Overview** cannot be changed. The items shown in the system overview include:

- **AMI BIOS:** Displays auto-detected BIOS information
 - Version: Current BIOS version
 - Build Date: Date the current BIOS version was made
 - ID: Installed BIOS ID
- **Processor:** Displays auto-detected CPU specifications
 - Type: Names the currently installed processor
 - Speed: Lists the processor speed
 - Count: The number of CPUs on the CPU card
- **System Memory:** Displays the auto-detected system memory.

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- Size: Lists memory size

The System Overview field also has two user configurable fields:

→ **System Time [xx:xx:xx]**

Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

→ **System Date [xx/xx/xx]**

Use the **System Date** option to set the system date. Manually enter the day, month and year.

7.3 Advanced

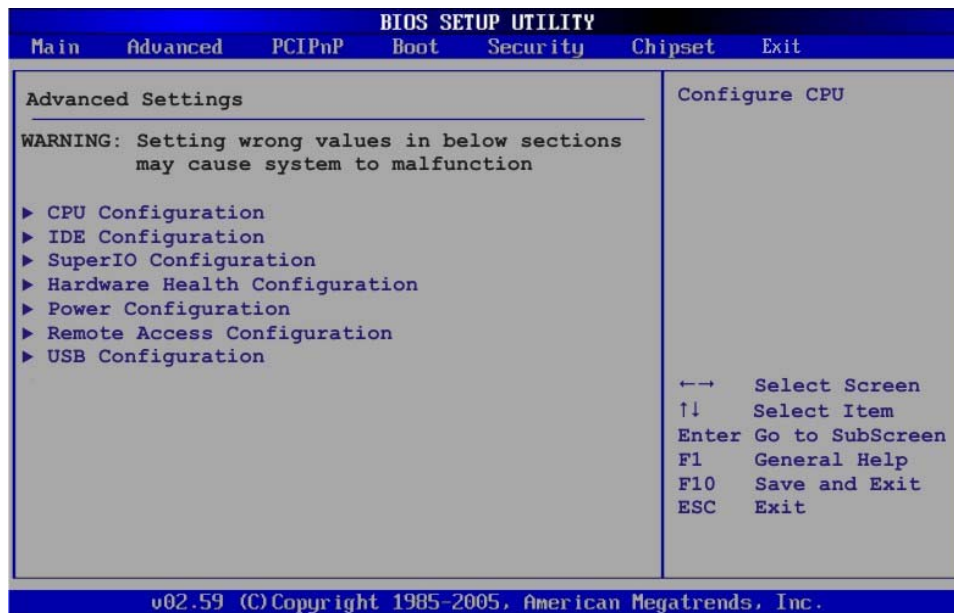
Use the **Advanced** menu (**BIOS Menu 2**) to configure the CPU and peripheral devices through the following sub-menus:



WARNING:

Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.

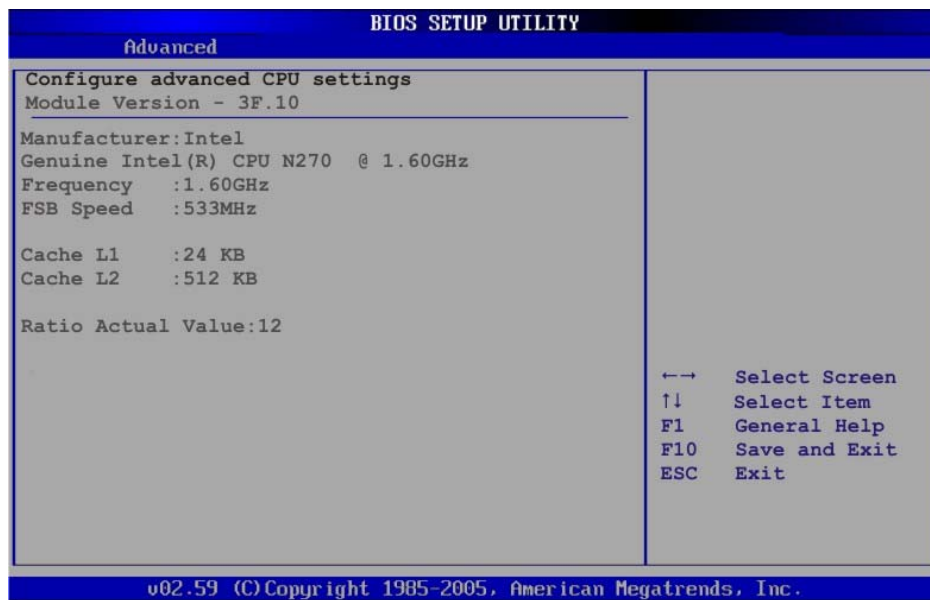
- CPU Configuration (see **Section 7.3.1**)
- IDE Configuration (see **Section 7.3.2**)
- SuperIO Configuration (see **Section 7.3.3**)
- Hardware Health Configuration (see **Section 7.3.4**)
- Power Configuration (see **Section 7.3.5**)
- Remote Access Configuration (see **Section 7.3.5.2**)
- USB Configuration (see **Section 7.3.7**)



BIOS Menu 2: Advanced

7.3.1 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 3**) to view detailed CPU specifications and configure the CPU.



BIOS Menu 3: CPU Configuration

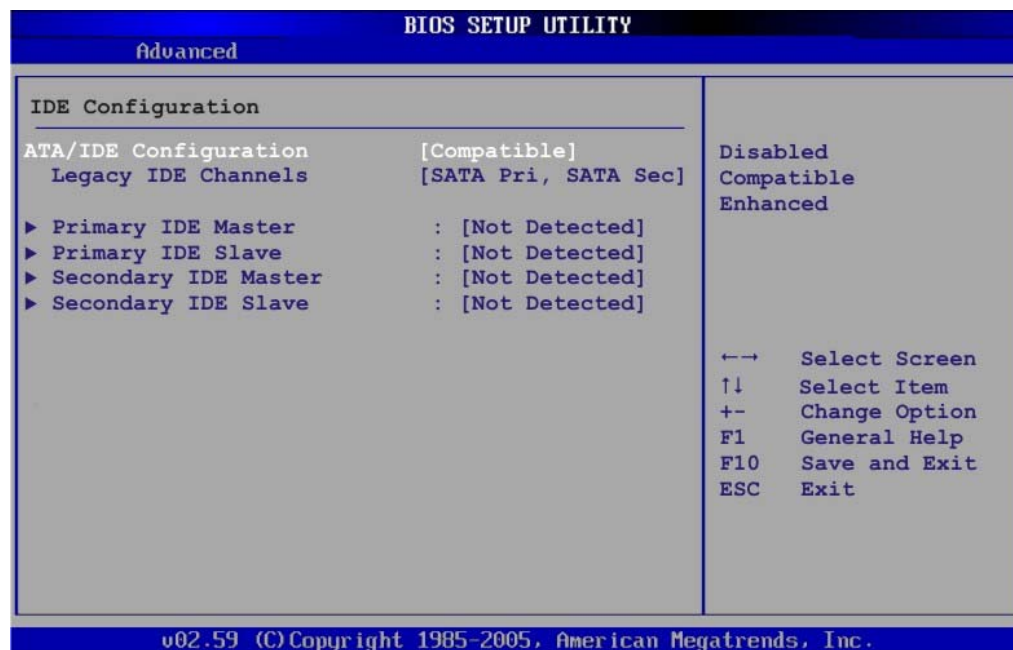
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The CPU Configuration menu (**BIOS Menu 3**) lists the following CPU details:

- **Manufacturer:** Lists the name of the CPU manufacturer
- **Brand String:** Lists the brand name of the CPU being used
- **Frequency:** Lists the CPU processing speed
- **FSB Speed:** Lists the FSB speed
- **Cache L1:** Lists the CPU L1 cache size
- **Cache L2:** Lists the CPU L2 cache size

7.3.2 IDE Configuration

Use the **IDE Configuration** menu (**BIOS Menu 4**) to change and/or set the configuration of the IDE devices installed in the system.



BIOS Menu 4: IDE Configuration

→ ATA/IDE Configurations [Compatible]

Use the **ATA/IDE Configurations** option to configure the ATA/IDE controller.

- **Disabled** Disables the on-board ATA/IDE controller.

- **Compatible** **DEFAULT** Configures the on-board ATA/IDE controller to be in compatible mode. In this mode, a SATA channel will replace one of the IDE channels. This mode supports up to 4 storage devices.

- **Enhanced** Configures the on-board ATA/IDE controller to be in Enhanced mode. In this mode, IDE channels and SATA channels are separated. This mode supports up to 6 storage devices. Some legacy OS do not support this mode.

- **Legacy IDE Channels [PATA Pri, SATA Sec]**
 - **SATA Only** Only the SATA drives are enabled.

 - **Reserved** The IDE channels are reserved.

 - **SATA Pri, PATA Sec** **DEFAULT** The IDE drives are enabled on the Primary IDE channel. The SATA drives are enabled on the Secondary IDE channel.

 - **PATA Only** The IDE drives are enabled on the primary and secondary IDE channels. SATA drives are disabled.

- **IDE Master and IDE Slave**

When entering setup, BIOS auto detects the presence of IDE devices. BIOS displays the status of the auto detected IDE devices. The following IDE devices are detected and are shown in the **IDE Configuration** menu:

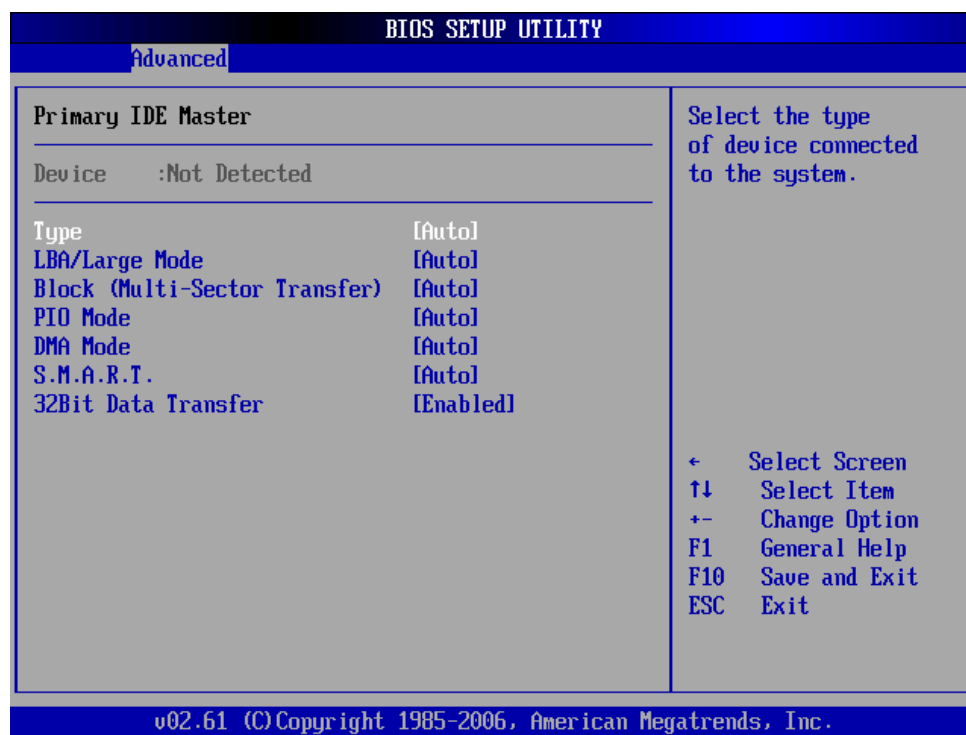
 - Primary IDE Master
 - Primary IDE Slave
 - Secondary IDE Master
 - Secondary IDE Slave

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The **IDE Configuration** menu (**BIOS Menu 4**) allows changes to the configurations for the IDE devices installed in the system. If an IDE device is detected, and one of the above listed four BIOS configuration options are selected, the IDE configuration options shown in **Section 7.3.2.1** appear.

7.3.2.1 IDE Master, IDE Slave

Use the **IDE Master** and **IDE Slave** configuration menu to view both primary and secondary IDE device details and configure the IDE devices connected to the system.



BIOS Menu 5: IDE Master and IDE Slave Configuration

→ Auto-Detected Drive Parameters

The “grayed-out” items in the left frame are IDE disk drive parameters automatically detected from the firmware of the selected IDE disk drive. The drive parameters are listed as follows:

- **Device:** Lists the device type (e.g. hard disk, CD-ROM etc.)
- **Type:** Indicates the type of devices a user can manually select
- **Vendor:** Lists the device manufacturer
- **Size:** List the storage capacity of the device.
- **LBA Mode:** Indicates whether the LBA (Logical Block Addressing) is a method of addressing data on a disk drive is supported or not.
- **Block Mode:** Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt.
- **PIO Mode:** Indicates the PIO mode of the installed device.
- **Async DMA:** Indicates the highest Asynchronous DMA Mode that is supported.
- **Ultra DMA:** Indicates the highest Synchronous DMA Mode that is supported.
- **S.M.A.R.T.:** Indicates whether or not the Self-Monitoring Analysis and Reporting Technology protocol is supported.
- **32Bit Data Transfer:** Enables 32-bit data transfer.

→ **Type [Auto]**

Use the **Type** BIOS option select the type of device the AMIBIOS attempts to boot from after the Power-On Self-Test (POST) is complete.

- | | | | |
|---|----------------------|----------------|--|
| → | Not Installed | | BIOS is prevented from searching for an IDE disk drive on the specified channel. |
| → | Auto | DEFAULT | The BIOS auto detects the IDE disk drive type attached to the specified channel. This setting should be used if an IDE hard disk drive is attached to the specified channel. |
| → | CD/DVD | | The CD/DVD option specifies that an IDE CD-ROM drive is attached to the specified IDE channel. The BIOS does not attempt to search for other types of |

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IDE disk drives on the specified channel.

→ ARMD

This option specifies an ATAPI Removable Media Device. These include, but are not limited to:

→ ZIP

→ LS-120

→ LBA/Large Mode [Auto]

Use the **LBA/Large Mode** option to disable or enable BIOS to auto detects LBA (Logical Block Addressing). LBA is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 137 GB.

→ Disabled

BIOS is prevented from using the LBA mode control on the specified channel.

→ Auto DEFAULT

BIOS auto detects the LBA mode control on the specified channel.

→ Block (Multi Sector Transfer) [Auto]

Use the **Block (Multi Sector Transfer)** to disable or enable BIOS to auto detect if the device supports multi-sector transfers.

→ Disabled

BIOS is prevented from using Multi-Sector Transfer on the specified channel. The data to and from the device occurs one sector at a time.

→ Auto DEFAULT

BIOS auto detects Multi-Sector Transfer support on the drive on the specified channel. If supported the data transfer to and from the device occurs multiple sectors at a time.

→ PIO Mode [Auto]

Use the **PIO Mode** option to select the IDE PIO (Programmable I/O) mode program timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases.

- **Auto DEFAULT** BIOS auto detects the PIO mode. Use this value if the IDE disk drive support cannot be determined.
- **0** PIO mode 0 selected with a maximum transfer rate of 3.3MBps
- **1** PIO mode 1 selected with a maximum transfer rate of 5.2MBps
- **2** PIO mode 2 selected with a maximum transfer rate of 8.3MBps
- **3** PIO mode 3 selected with a maximum transfer rate of 11.1MBps
- **4** PIO mode 4 selected with a maximum transfer rate of 16.6MBps
(This setting generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.)

→ DMA Mode [Auto]

Use the **DMA Mode** BIOS selection to adjust the DMA mode options.

- **Auto DEFAULT** BIOS auto detects the DMA mode. Use this value if the IDE disk drive support cannot be determined.
- **SWDMA0** Single Word DMA mode 0 selected with a maximum data transfer rate of 2.1MBps
- **SWDMA1** Single Word DMA mode 1 selected with a maximum data transfer rate of 4.2MBps
- **SWDMA2** Single Word DMA mode 2 selected with a maximum data transfer rate of 8.3MBps

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- **MWDMA0** Multi Word DMA mode 0 selected with a maximum data transfer rate of 4.2MBps
- **MWDMA1** Multi Word DMA mode 1 selected with a maximum data transfer rate of 13.3MBps
- **MWDMA2** Multi Word DMA mode 2 selected with a maximum data transfer rate of 16.6MBps
- **UDMA1** Ultra DMA mode 0 selected with a maximum data transfer rate of 16.6MBps
- **UDMA1** Ultra DMA mode 1 selected with a maximum data transfer rate of 25MBps
- **UDMA2** Ultra DMA mode 2 selected with a maximum data transfer rate of 33.3MBps
- **UDMA3** Ultra DMA mode 3 selected with a maximum data transfer rate of 44MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)
- **UDMA4** Ultra DMA mode 4 selected with a maximum data transfer rate of 66.6MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)
- **UDMA5** Ultra DMA mode 5 selected with a maximum data transfer rate of 99.9MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)

→ **S.M.A.R.T [Auto]**

Use the **S.M.A.R.T** option to auto-detect, disable or enable Self-Monitoring Analysis and Reporting Technology (SMART) on the drive on the specified channel. **S.M.A.R.T** predicts impending drive failures. The **S.M.A.R.T** BIOS option enables or disables this function.

- ➔ **Auto** **DEFAULT** BIOS auto detects HDD SMART support.
- ➔ **Disabled** Prevents BIOS from using the HDD SMART feature.
- ➔ **Enabled** Allows BIOS to use the HDD SMART feature

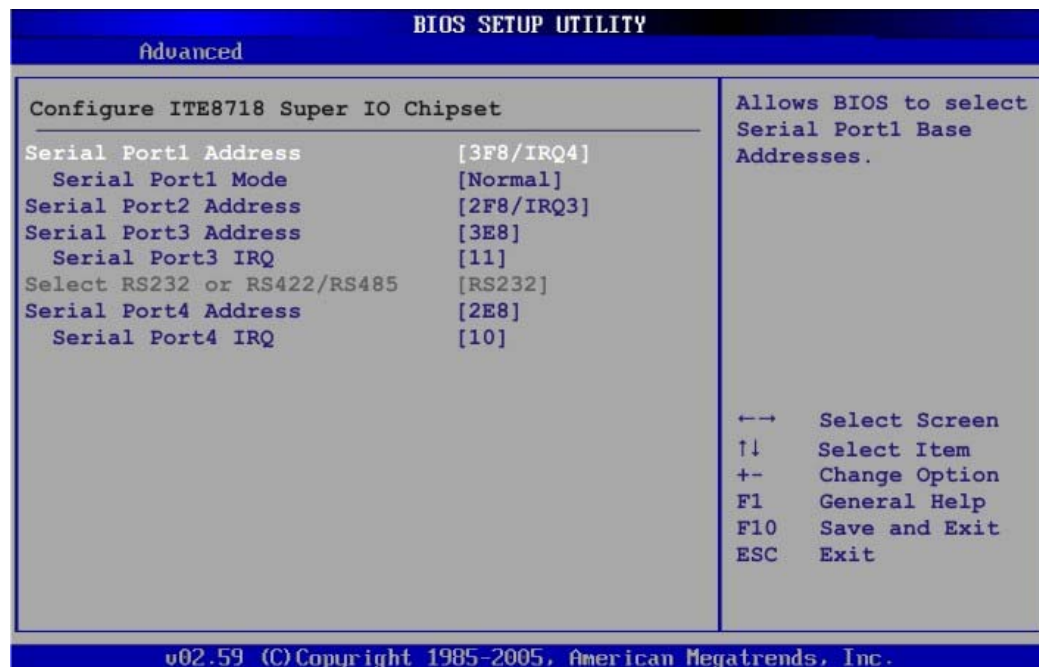
➔ **32Bit Data Transfer [Enabled]**

Use the **32Bit Data Transfer** BIOS option to enables or disable 32-bit data transfers.

- ➔ **Disabled** Prevents the BIOS from using 32-bit data transfers.
- ➔ **Enabled** **DEFAULT** Allows BIOS to use 32-bit data transfers on supported hard disk drives.

7.3.3 Super IO Configuration

Use the **Super IO Configuration** menu (**BIOS Menu 6**) to set or change the configurations for the FDD controllers, parallel ports and serial ports.



BIOS Menu 6: Super IO Configuration

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→ Serial Port1 Address [3F8/IRQ4]

Use the **Serial Port1 Address** option to select the Serial Port 1 base address.

- **Disabled** No base address is assigned to Serial Port 1
- **3F8/IRQ4** **DEFAULT** Serial Port 1 I/O port address is 3F8 and the interrupt address is IRQ4
- **3E8/IRQ4** Serial Port 1 I/O port address is 3E8 and the interrupt address is IRQ4
- **2E8/IRQ3** Serial Port 1 I/O port address is 2E8 and the interrupt address is IRQ3

→ Serial Port1 Mode [Normal]

Use the **Serial Port1 Mode** option to select the transmitting and receiving mode for the first serial port.

- **Normal** **DEFAULT** Serial Port 1 mode is normal
- **IrDA** Serial Port 1 mode is IrDA
- **ASK IR** Serial Port 1 mode is ASK IR

→ Serial Port2 Address [2F8/IRQ3]

Use the **Serial Port2 Address** option to select the Serial Port 2 base address.

- **Disabled** No base address is assigned to Serial Port 2
- **2F8/IRQ3** **DEFAULT** Serial Port 2 I/O port address is 2F8 and the interrupt address is IRQ3
- **3E8/IRQ4** Serial Port 2 I/O port address is 3E8 and the interrupt address is IRQ4

- ➔ **2E8/IRQ3** Serial Port 2 I/O port address is 2E8 and the interrupt address is IRQ3

➔ **Serial Port3 Address [3E8]**

Use the **Serial Port3 Address** option to select the Serial Port 3 base address.

- ➔ **Disabled** No base address is assigned to Serial Port 3
- ➔ **3E8** **DEFAULT** Serial Port 3 I/O port address is 3E8
- ➔ **2E8** Serial Port 3 I/O port address is 2E8
- ➔ **2F0** Serial Port 3 I/O port address is 2F0
- ➔ **2E0** Serial Port 3 I/O port address is 2E0

➔ **Serial Port3 IRQ [11]**

Use the **Serial Port3 IRQ** option to select the interrupt address for serial port 3.

- ➔ **10** Serial port 3 IRQ address is 10
- ➔ **11** **DEFAULT** Serial port 3 IRQ address is 11

➔ **Serial Port4 Address [2E8]**

Use the **Serial Port4 IRQ** option to select the interrupt address for serial port 4.

- ➔ **Disabled** No base address is assigned to serial port 3
- ➔ **2E8** **DEFAULT** Serial port 4 I/O port address is 2E8

➔ **Serial Port4 IRQ [10]**

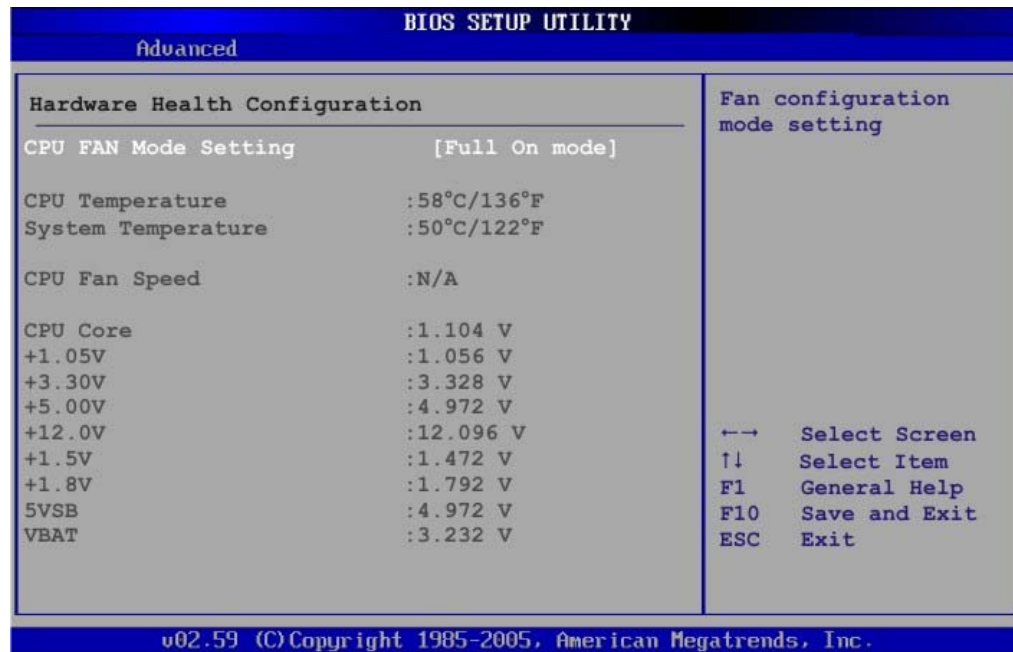
Use the **Serial Port4 IRQ** option to select the interrupt address for serial port 4.

- ➔ **10** **DEFAULT** Serial port 4 IRQ address is 10

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7.3.4 Hardware Health Configuration

The **Hardware Health Configuration** menu (**BIOS Menu 7**) shows the operating temperature, fan speeds and system voltages.



BIOS Menu 7: Hardware Health Configuration

→ CPU FAN Mode Setting [Full On Mode]

Use the **CPU FAN Mode Setting** option to configure the second fan.

- **Full On Mode** **DEFAULT** Fan is on all the time
- **Automatic mode** Fan is off when the temperature is low enough. Parameters must be set by the user.
- **PWM Manual mode** Pulse width modulation set manually

When the **CPU FAN Mode Setting** option is in the **Automatic Mode**, the following parameters can be set.

- CPU Temp. Limit of OFF
- CPU Temp. Limit of Start
- CPU Fan Start PWM
- Slope PWM

When the **CPU FAN Mode Setting** option is in the **PWM Manual Mode**, the following parameters can be set.

- CPU Fan PWM control

→ **CPU Temp. Limit of OFF [000]**



WARNING:

Setting this value too high may cause the fan to stop when the CPU is at a high temperature and therefore cause the system to be damaged.

The **CPU Temp. Limit of OFF** option can only be set if the **CPU FAN Mode Setting** option is set to **Automatic Mode**. Use the **CPU Temp. Limit of OFF** option to select the CPU temperature at which the cooling fan should automatically turn off. To select a value, select the **CPU Temp. Limit of OFF** option and enter a decimal number between 000 and 127. The temperature range is specified below.

- Minimum Value: 0°C
- Maximum Value: 127°C

→ **CPU Temp. Limit of Start [020]**



WARNING:

Setting this value too high may cause the fan to start only when the CPU is at a high temperature and therefore cause the system to be

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damaged.

The **CPU Temp. Limit of Start** option can only be set if the **CPU FAN Mode Setting** option is set to **Automatic Mode**. Use the **CPU Temp. Limit of Start** option to select the CPU temperature at which the cooling fan should automatically turn on. When the fan starts, it rotates using the starting pulse width modulation (PWM) specified in the **Fan 3 Start PWM** option below. To select a value, select the **CPU Temp. Limit of Start** option and enter a decimal number between 000 and 127. The temperature range is specified below.

- Minimum Value: 0°C
- Maximum Value: 127°C

→ CPU Fan Start PWM [070]

The **Fan 3 Start PWM** option can only be set if the **CPU FAN Mode Setting** option is set to **Automatic Mode**. Use the **Fan 3 Start PWM** option to select the PWM mode the fan starts to rotate with after the temperature specified in the **Temperature 3 Limit of Start** is exceeded. The Super I/O chipset supports 128 PWM modes. To select a value, select the **Fan 3 Start PWM** option and enter a decimal number between 000 and 127. The temperature range is specified below.

- PWM Minimum Mode: 0
- PWM Maximum Mode: 127

→ Slope PWM [0.5 PWM]

The **Slope PWM 1** option can only be set if the **CPU FAN Mode Setting** option is set to **Automatic Mode**. Use the **Slope PWM 1** option to select the linear rate at which the PWM mode increases with respect to an increase in temperature. A list of available options is shown below:

- 0.125 PWM
- 0.25 PWM
- 0.5 PWM

- 1 PWM
- 2 PWM
- 4 PWM
- 8 PWM
- 15 PWM

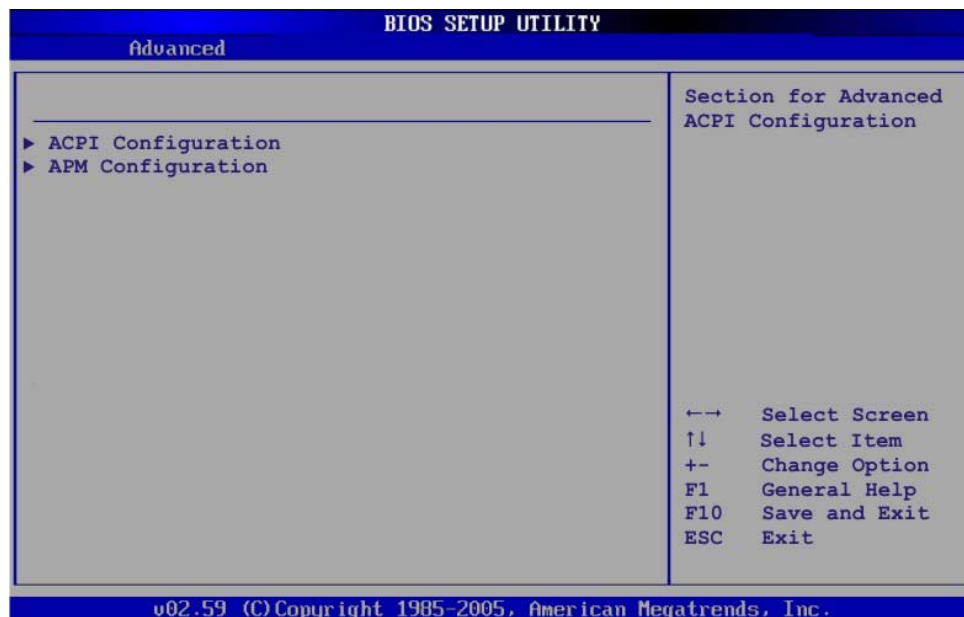
The following system parameters and values are shown. The system parameters that are monitored are:

- **System Temperatures:** The following system temperatures are monitored
 - CPU Temperature
 - System Temperature
- **Fan Speeds:** The CPU cooling fan speed is monitored.
 - CPU Fan Speed
- **Voltages:** The following system voltages are monitored
 - CPU Core
 - +1.05V
 - +3.30V
 - +5.00V
 - +12.0 V
 - +1.5V
 - +1.8V
 - 5VSB
 - VBAT

7.3.5 Power Configuration

The **Power Configuration** menu (**BIOS Menu 8**) configures the Advanced Configuration and Power Interface (ACPI) and Power Management (APM) options.

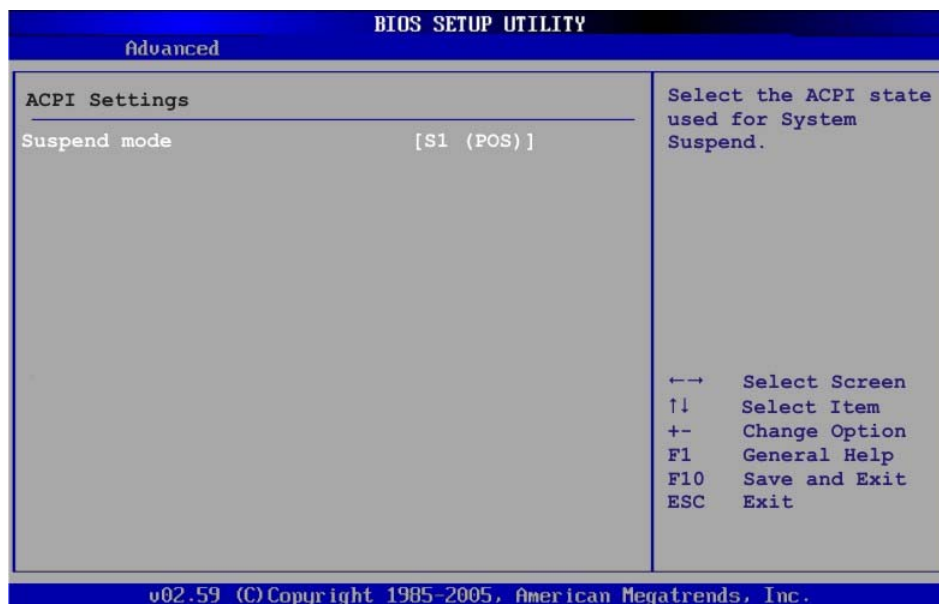
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BIOS Menu 8: Power Configuration

7.3.5.1 ACPI configuration

The **ACPI Configuration** menu (**BIOS Menu 9**) configures the Advanced Configuration and Power Interface (ACPI).



BIOS Menu 9: ACPI Configuration

→ Suspend Mode [S1(POS)]

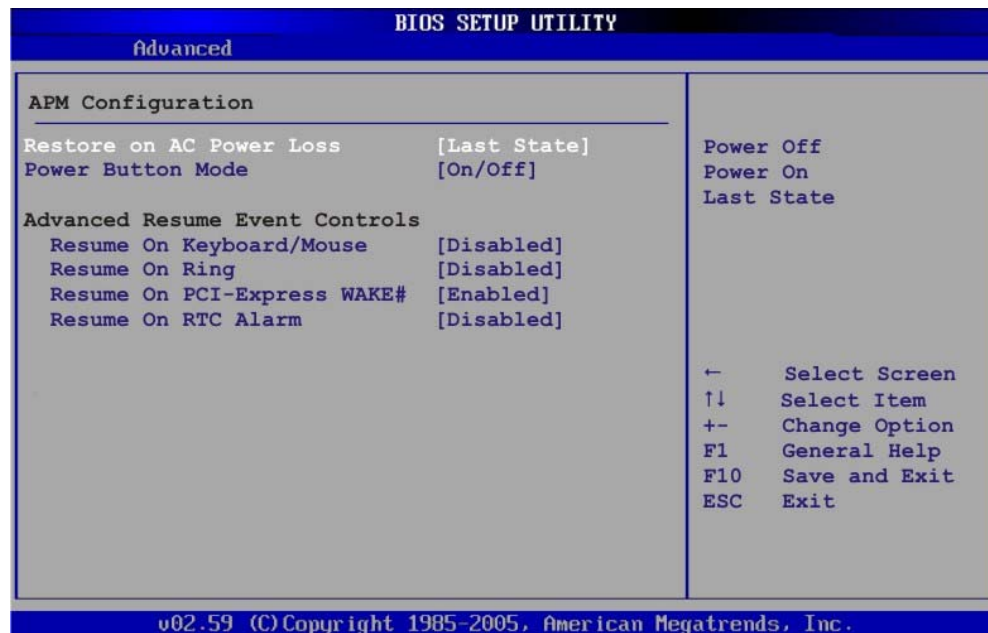
Use the **Suspend Mode** BIOS option to specify the sleep state the system enters when it is not being used.

→ **S1 (POS) DEFAULT** System appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode.

→ **S3 (STR)** System appears off. The CPU has no power; RAM is in slow refresh; the power supply is in a reduced power mode.

7.3.5.2 APM Configuration

The **APM Configuration** menu (**BIOS Menu 10**) allows the advanced power management options to be configured.



BIOS Menu 10: Advanced Power Management Configuration

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→ Restore on AC Power Loss [Last State]

Use the **Restore on AC Power Loss** BIOS option to specify what state the system returns to if there is a sudden loss of power to the system.

- **Power Off** The system remains turned off
- **Power On** The system turns on
- **Last State DEFAULT** The system returns to its previous state. If it was on, it turns itself on. If it was off, it remains off.

→ Power Button Mode [On/Off]

Use the **Power Button Mode** BIOS to specify how the power button functions.

- **On/Off DEFAULT** When the power button is pressed the system is either turned on or off
- **Suspend** When the power button is pressed the system goes into suspend mode

→ Resume on Keyboard/Mouse [Disabled]

Use the **Resume on Keyboard/Mouse** BIOS option to enable activity on either the keyboard or mouse to rouse the system from a suspend or standby state. That is, the system is roused when the mouse is moved or a button on the keyboard is pressed.

- **Disabled DEFAULT** Wake event not generated by activity on the keyboard or mouse
- **Resume On** Wake event not generated by activity on the
KeyBoard keyboard
- **Resume On** Wake event not generated by activity on the
Mouse mouse

→ **Enabled** Wake event generated by activity on the keyboard or mouse

→ **Resume on Ring [Disabled]**

Use the **Resume on Ring** BIOS option to enable activity on the RI (ring in) modem line to rouse the system from a suspend or standby state. That is, the system will be roused by an incoming call on a modem.

→ **Disabled** **DEFAULT** Wake event not generated by an incoming call

→ **Enabled** Wake event generated by an incoming call

→ **Resume on PCI-Express WAKE# [Enabled]**

Use the **Resume PCI-Express WAKE#** BIOS option to enable activity on the PCI-Express WAKE# signal to rouse the system from a suspend or standby state.

→ **Enabled** **DEFAULT** Wake event generated by PCI-Express WAKE# signal activity

→ **Disabled** Wake event not generated by PCI-Express WAKE# signal activity

→ **Resume On RTC Alarm [Disabled]**

Use the **Resume On RTC Alarm** option to specify the time the system should be roused from a suspended state.

→ **Disabled** **DEFAULT** The real time clock (RTC) cannot generate a wake event

→ **Enabled** If selected, the following appears with values that can be selected:

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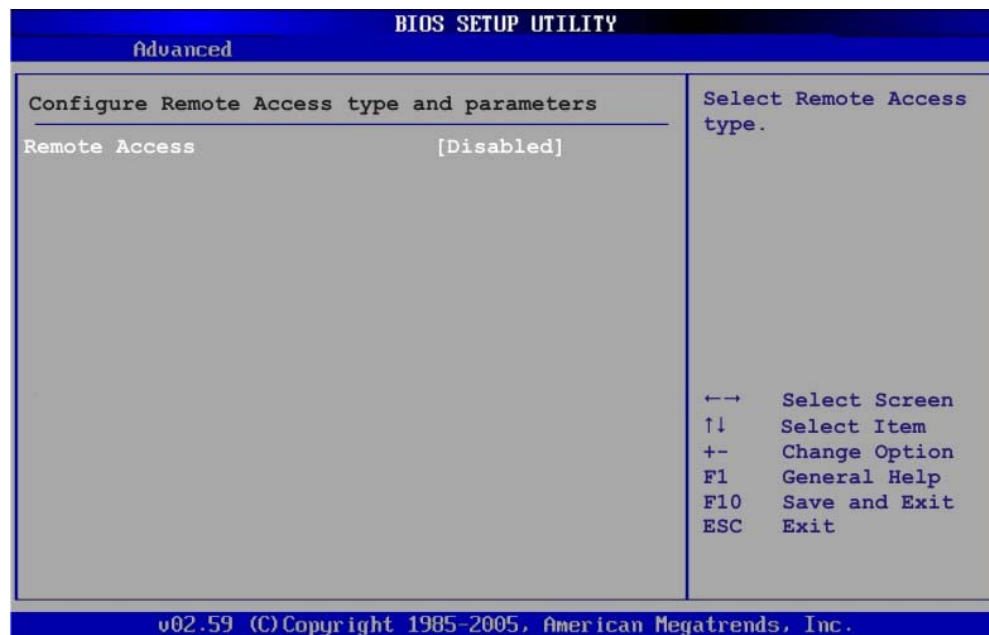
→ **RTC Alarm Date (Days)**

→ **System Time**

After setting the alarm, the computer turns itself on from a suspend state when the alarm goes off.

7.3.6 Remote Configuration

Use the **Remote Access Configuration** menu (**BIOS Menu 11**) to configure remote access parameters. The **Remote Access Configuration** is an AMIBIOS feature and allows a remote host running a terminal program to display and configure the BIOS settings.



BIOS Menu 11: Remote Access Configuration [Advanced]

→ **Remote Access [Disabled]**

Use the **Remote Access** option to enable or disable access to the remote functionalities of the system.

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- **Disabled** **DEFAULT** Remote access is disabled.
- **Enabled** Remote access configuration options shown below appear:
 - **Serial Port Number**
 - **Serial Port Mode**
 - **Redirection after BIOS POST**
 - **Terminal Type**

These configuration options are discussed below.

→ **Serial Port Number [COM1]**

Use the **Serial Port Number** option allows to select the serial port used for remote access.

- **COM1** **DEFAULT** System is remotely accessed through COM1
- **COM2** System is remotely accessed through COM2
- **COM3** System is remotely accessed through COM3

NOTE: Make sure the selected COM port is enabled through the Super I/O configuration menu.

→ **Base Address, IRQ [3F8h,4]**

The **Base Address, IRQ** option cannot be configured and only shows the interrupt address of the serial port listed above.

→ **Serial Port Mode [115200 8,n,1]**

Use the **Serial Port Mode** option to select baud rate through which the console redirection is made. The following configuration options are available

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- 115200 8,n,1 **DEFAULT**
- 57600 8,n,1
- 38400 8,n,1
- 19200 8,n,1
- 09600 8,n,1



NOTE:

Identical baud rate setting must be set on the host (a management computer running a terminal software) and the slave

→ Redirection After BIOS POST [Always]

Use the **Redirection After BIOS POST** option to specify when console redirection should occur.

- | | | | |
|---|--------------------|----------------|--|
| → | Disabled | | The console is not redirected after POST |
| → | Boot Loader | | Redirection is active during POST and during Boot Loader |
| → | Always | DEFAULT | Redirection is always active (Some OSes may not work if set to Always) |

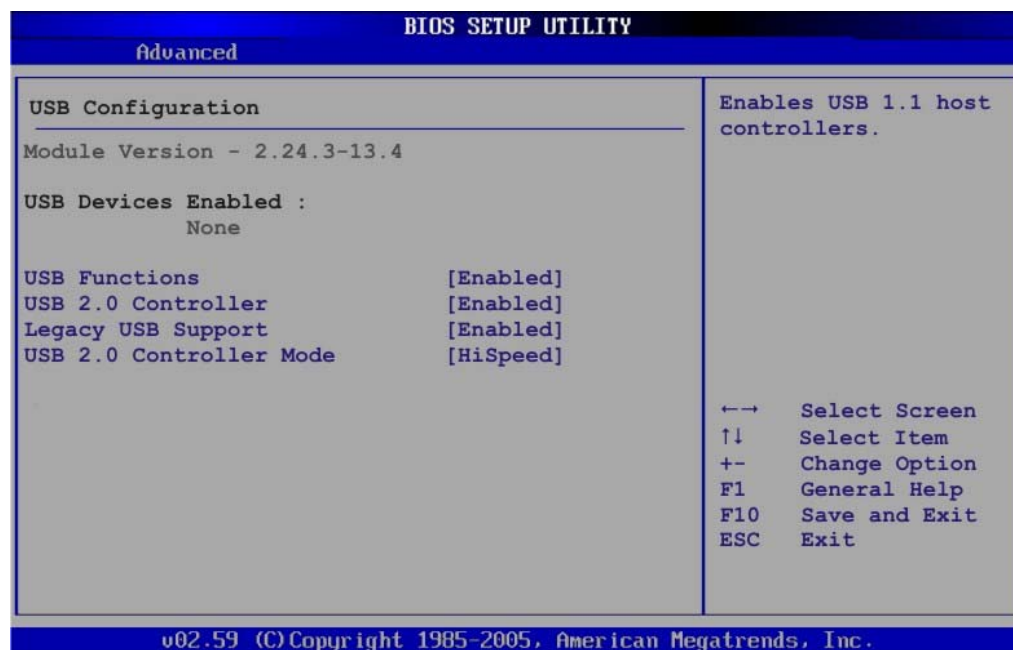
→ Terminal Type [ANSI]

Use the **Terminal Type** BIOS option to specify the remote terminal type.

- | | | | |
|---|----------------|----------------|-------------------------------------|
| → | ANSI | DEFAULT | The target terminal type is ANSI |
| → | VT100 | | The target terminal type is VT100 |
| → | VT-UTF8 | | The target terminal type is VT-UTF8 |

7.3.7 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 12**) to read USB configuration information and configure the USB settings.



BIOS Menu 12: USB Configuration

→ USB Functions [Enabled]

Use the **USB Function** option to enable or disable the USB controllers.

- **Disabled** USB controllers are enabled
- **Enabled** **DEFAULT** USB controllers are disabled

→ USB 2.0 Controller [Enabled]

The **USB 2.0 Controller** BIOS option enables or disables the USB 2.0 controller

- **Enabled** **DEFAULT** USB function enabled
- **Disabled** USB function disabled

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→ Legacy USB Support [Enabled]

Use the **Legacy USB Support** BIOS option to enable USB mouse and USB keyboard support.

Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB driver loaded onto the system.

- **Disabled** Legacy USB support disabled
- **Enabled** **DEFAULT** Legacy USB support enabled
- **Auto** Legacy USB support disabled if no USB devices are connected

→ USB2.0 Controller Mode [HiSpeed]

The **USB2.0 Controller Mode** BIOS option sets the speed of the USB2.0 controller.

- **FullSpeed** The controller is capable of operating at full speed
12 Mb/s
- **HiSpeed** **DEFAULT** The controller is capable of operating at high speed
480 Mb/s

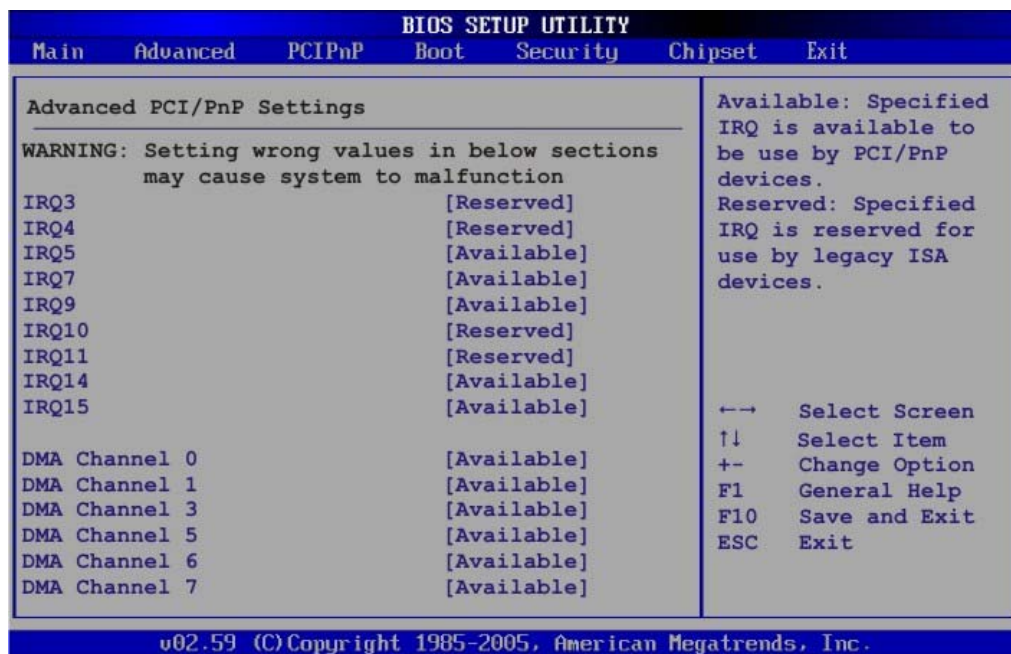
7.4 PCI/PnP

Use the PCI/PnP menu (**BIOS Menu 13**) to configure advanced PCI and PnP settings.



WARNING:

Setting wrong values for the BIOS selections in the PCIPnP BIOS menu may cause the system to malfunction.



BIOS Menu 13: PCI/PnP Configuration

→ IRQ# [Available]

Use the **IRQ#** address to specify what IRQs can be assigned to a particular peripheral device.

- **Available** **DEFAULT** The specified IRQ is available to be used by PCI/PnP devices
- **Reserved** The specified IRQ is reserved for use by Legacy ISA devices

Available IRQ addresses are:

- IRQ3
- IRQ4
- IRQ5
- IRQ7
- IRQ9

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- IRQ10
- IRQ 11
- IRQ 14
- IRQ 15

→ DMA Channel# [Available]

Use the **DMA Channel#** option to assign a specific DMA channel to a particular PCI/PnP device.

- | | | | |
|---|------------------|----------------|--|
| → | Available | DEFAULT | The specified DMA is available to be used by PCI/PnP devices |
| → | Reserved | | The specified DMA is reserved for use by Legacy ISA devices |

Available DMA Channels are:

- DM Channel 0
- DM Channel 1
- DM Channel 3
- DM Channel 5
- DM Channel 6
- DM Channel 7

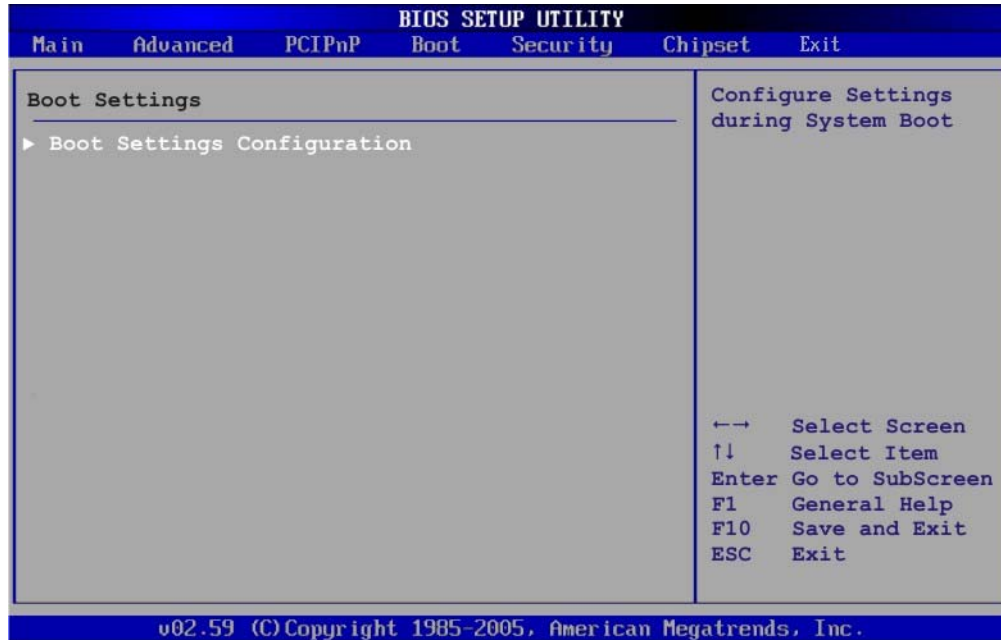
→ Reserved Memory Size [Disabled]

Use the **Reserved Memory Size** BIOS option to specify the amount of memory that should be reserved for legacy ISA devices.

- | | | | |
|---|-----------------|----------------|---|
| → | Disabled | DEFAULT | No memory block reserved for legacy ISA devices |
| → | 16K | | 16KB reserved for legacy ISA devices |
| → | 32K | | 32KB reserved for legacy ISA devices |
| → | 64K | | 54KB reserved for legacy ISA devices |

7.5 Boot

Use the Boot menu (**BIOS Menu 14**) to configure system boot options.

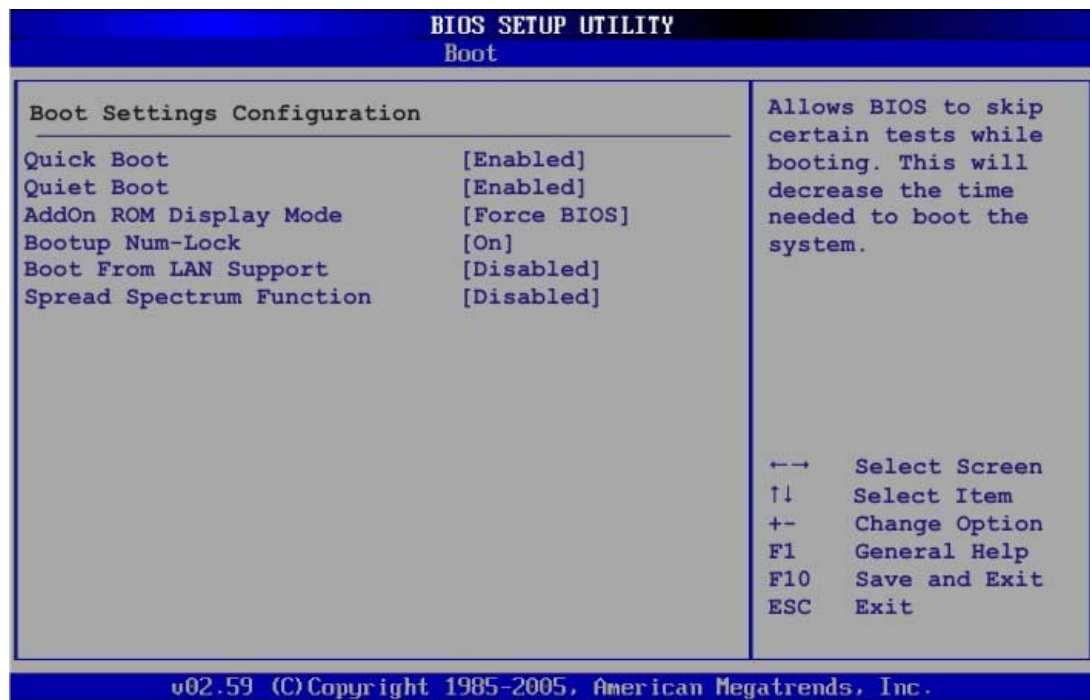


BIOS Menu 14: Boot

7.5.1 Boot Settings Configuration

Use the Boot Settings Configuration menu (**BIOS Menu 15**) to configure advanced system boot options.

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BIOS Menu 15: Boot Settings Configuration

→ Quick Boot [Enabled]

Use the **Quick Boot** BIOS option to make the computer speed up the boot process.

- **Disabled** No POST procedures are skipped
- **Enabled** **DEFAULT** Some POST procedures are skipped to decrease the system boot time

→ Quiet Boot [Disabled]

Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

- **Disabled** **DEFAULT** Normal POST messages displayed
- **Enabled** OEM Logo displayed instead of POST messages

→ **AddOn ROM Display Mode [Force BIOS]**

The **AddOn ROM Display Mode** option allows add-on ROM (read-only memory) messages to be displayed.

→ **Force BIOS** **DEFAULT** Allows the computer system to force a third party BIOS to display during system boot.

→ **Keep Current** Allows the computer system to display the information during system boot.

→ **Bootup Num-Lock [On]**

The **Bootup Num-Lock** BIOS option allows the Number Lock setting to be modified during boot up.

→ **Off** Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.

→ **On** **DEFAULT** Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.

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→ Boot From LAN Support [Disabled]

The **BOOT From LAN Support** option enables the system to be booted from a remote system.

- **Enabled** Can be booted from a remote system through the LAN
- **Disabled** **DEFAULT** Cannot be booted from a remote system through the LAN

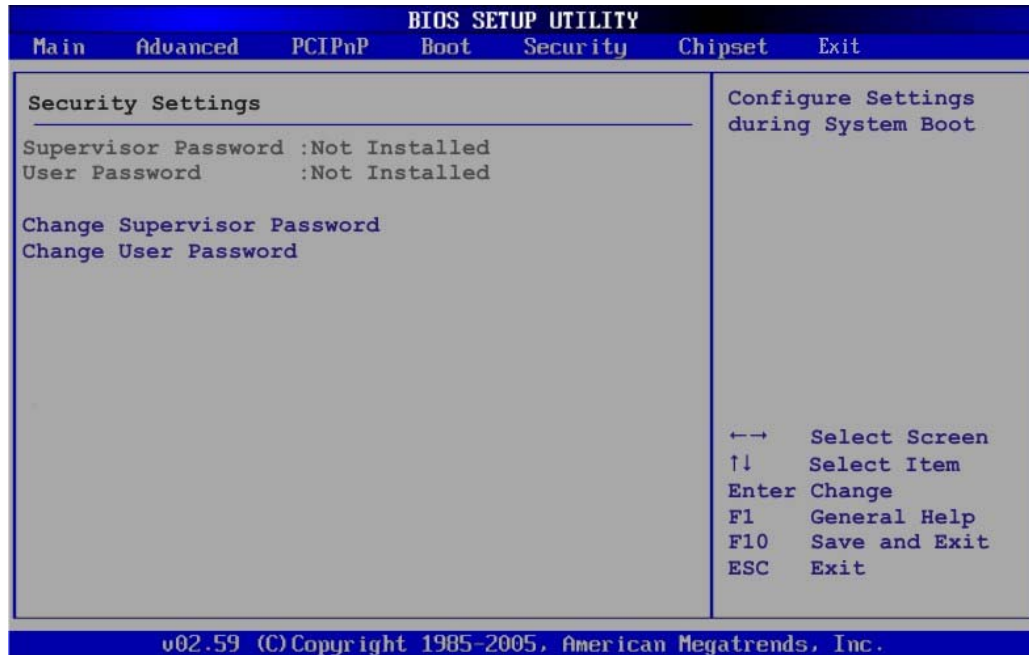
→ Spread Spectrum Function [Disabled]

Use the **Spread Spectrum Function** option to reduce the EMI. Excess EMI is generated when the system clock generator pulses have extreme values. Spreading the pulse spectrum modulates changes in the extreme values from spikes to flat curves, thus reducing the EMI. This benefit may in some cases be outweighed by problems with timing-critical devices, such as a clock-sensitive SCSI device.

- **Disabled** **DEFAULT** EMI not reduced
- **Enabled** EMI reduced

7.6 Security

Use the Security menu (**BIOS Menu 16**) to set system and user passwords.



BIOS Menu 16: Security

→ Change Supervisor Password

Use the **Change Supervisor Password** to set or change a supervisor password. The default for this option is **Not Installed**. If a supervisor password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change Supervisor Password**.

→ Change User Password

Use the **Change User Password** to set or change a user password. The default for this option is **Not Installed**. If a user password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change User Password**.

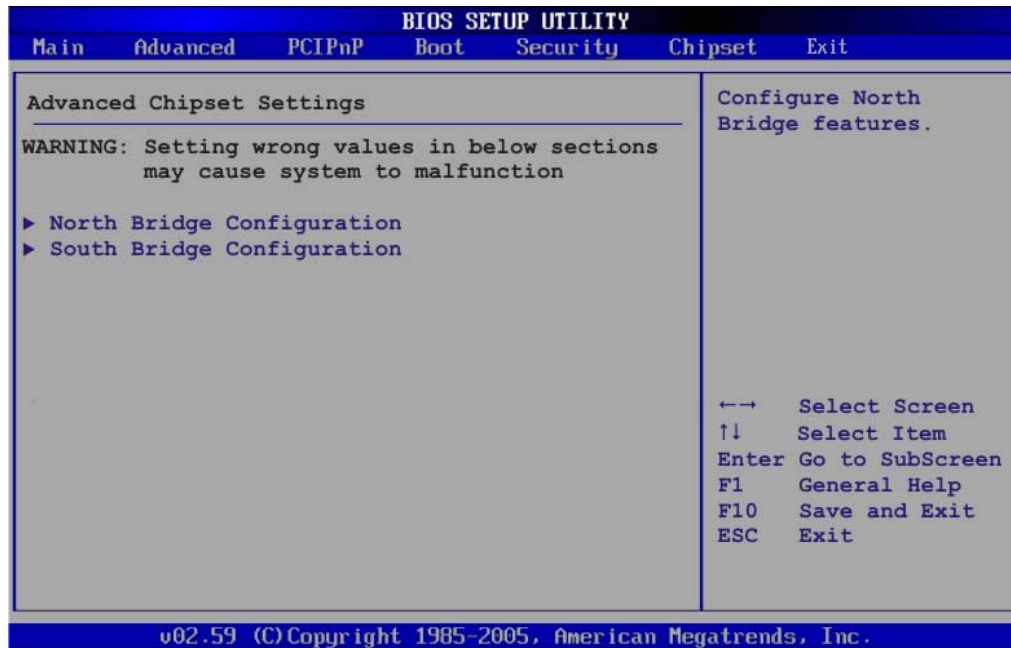
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7.7 Chipset

Use the **Chipset** menu (**BIOS Menu 17**) to access the NorthBridge and SouthBridge configuration menus

**WARNING!**

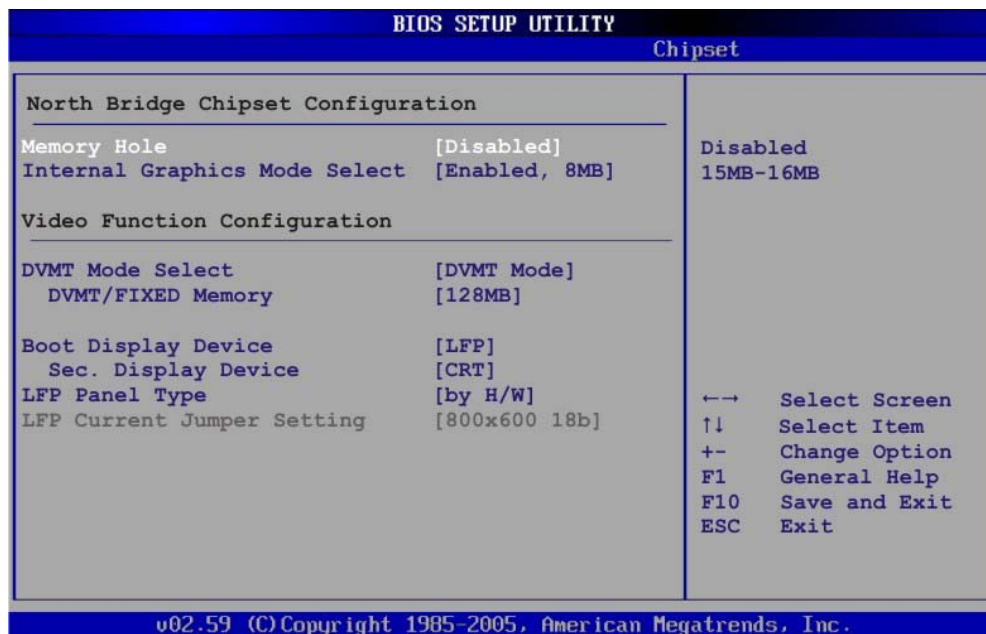
Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.



BIOS Menu 17: Chipset

7.7.1 North Bridge Chipset Configuration

Use the **North Bridge Chipset Configuration** menu (**BIOS Menu 18**) to configure the Northbridge chipset settings.



BIOS Menu 18:North Bridge Chipset Configuration

→ Memory Hole [Disabled]

The **Memory Hole** reserves the memory space between 15MB and 16MB for ISA expansion cards that require a specified area of memory to work properly. If an older ISA expansion card is used, please refer to the documentation that came with the card to see if it is necessary to reserve the space.

→ **Disabled** **DEFAULT** Memory is not reserved for ISA expansion cards

→ **15MB** – Between 15MB and 16MB of memory is reserved for
16MB ISA expansion cards

→ Internal Graphics Mode Select [Enable, 8MB]

The **Internal Graphic Mode Select** option determines the amount of system memory that can be used by the Internal graphics device.

→ **Disable**

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- ➔ **Enable, 1MB** 1MB of memory used by internal graphics device
- ➔ **Enable, 8MB** **DEFAULT** 8MB of memory used by internal graphics device

➔ **DVMT Mode Select [DVMT Mode]**

Use the **DVMT Mode Select** option to select the Intel Dynamic Video Memory Technology (DVMT) operating mode.

- ➔ **Fixed Mode** A fixed portion of graphics memory is reserved as graphics memory.
- ➔ **DVMT Mode** **DEFAULT** Graphics memory is dynamically allocated according to the system and graphics needs.
- ➔ **Combo Mode** A fixed portion of graphics memory is reserved as graphics memory. If more memory is needed, graphics memory is dynamically allocated according to the system and graphics needs.

➔ **DVMT/FIXED Memory [128MB]**

Use the **DVMT/FIXED Memory** option to specify the maximum amount of memory that can be allocated as graphics memory. This option can only be configured for if **DVMT Mode** or **Fixed Mode** is selected in the **DVMT Mode Select** option. If **Combo Mode** is selected, the maximum amount of graphics memory is 128MB. Configuration options are listed below.

- 64MB
- 128MB **DEFAULT**
- Maximum DVMT

➔ **Boot Display Device [LFP]**

Use the **Boot Display Device** option to select the display device used by the system when it boots. Configuration options are listed below.

- CRT
- LFP **DEFAULT**

→ **Sec. Display Device [CRT]**

Use the **Sec. Display Device** option to select the second display device used by the system. Configuration options are listed below.

- Disabled
- CRT **DEFAULT**

→ **LFP Panel Type [by H/W]**

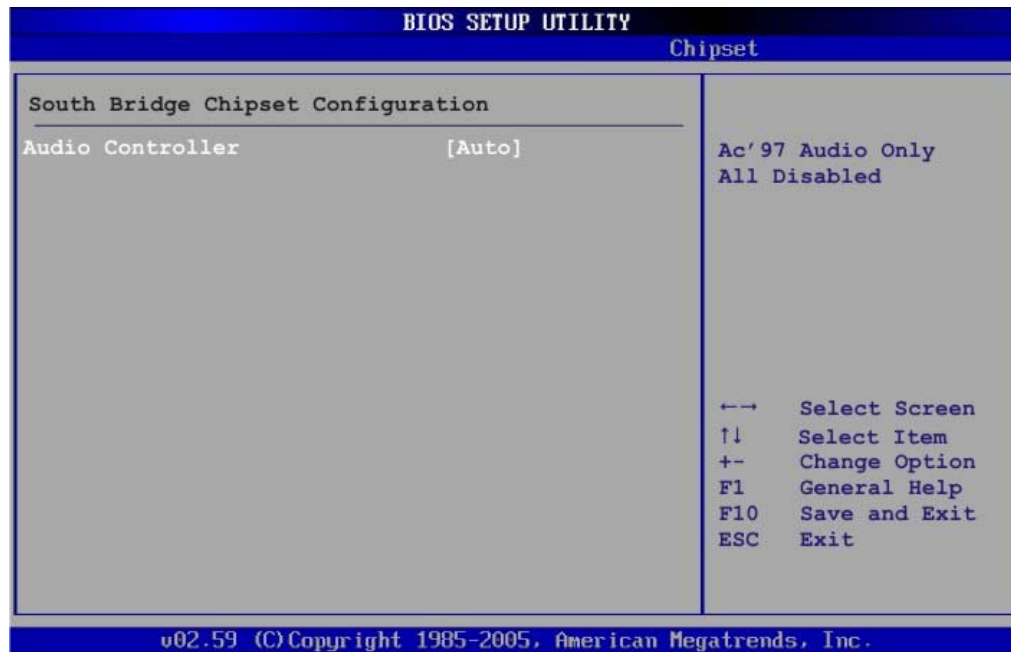
Use the **LFP Panel Type** option to select the type of flat panel connected to the system. Configuration options are listed below.

- 640x480 18b
- 800x480 18b
- 800x600 18b
- 1024x768 18b
- 1280x1024 36b
- 1400x1050 36b
- 1440x900 36b
- 1600x1200 36b
- by H/W **DEFAULT**

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7.7.2 SouthBridge Configuration

The **SouthBridge Configuration** menu (**BIOS Menu 19**) the southbridge chipset to be configured.



BIOS Menu 19: SouthBridge Chipset Configuration

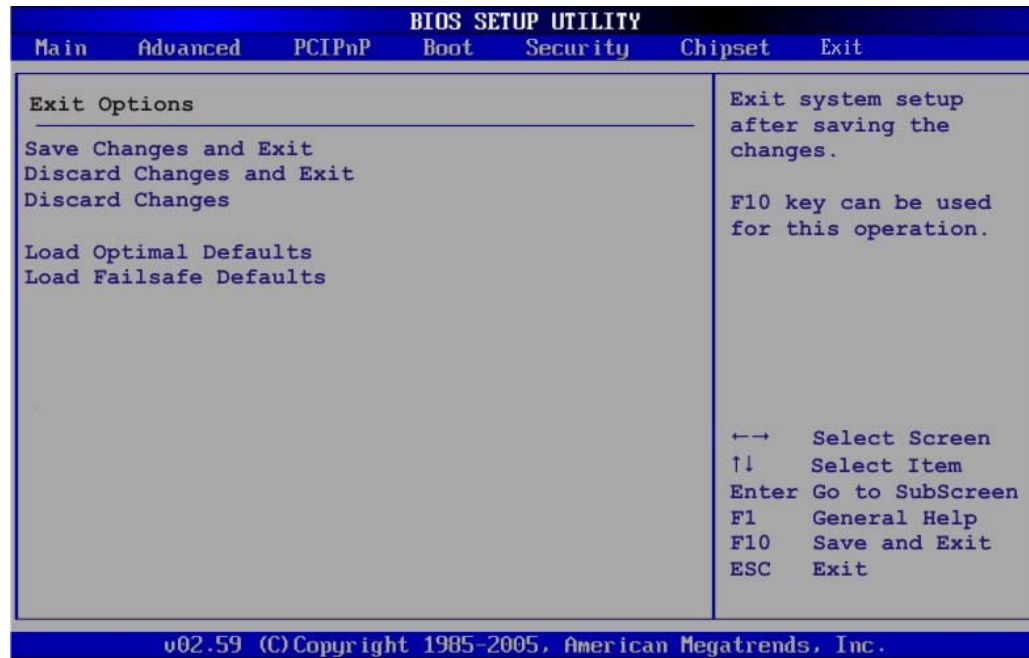
→ Audio Controller [AC'97 Audio Only]

The **Audio Controller** option enables or disables the audio controller.

- | | | | |
|---|-------------------------|----------------|--|
| → | Auto | DEFAULT | The onboard audio codec automatically detected and enabled |
| → | Azalia | | The High Definition Audio codec is enabled. |
| → | AC'97 Audio Only | | The on-board AC'97 audio controller is enabled. |
| → | All Disabled | | The on-board audio controller is disabled. |

7.8 Exit

Use the **Exit** menu (**BIOS Menu 20**) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 20:Exit

→ Save Changes and Exit

Use the **Save Changes and Exit** option to save the changes made to the BIOS options and to exit the BIOS configuration setup program.

→ Discard Changes and Exit

Use the **Discard Changes and Exit** option to exit the BIOS configuration setup program without saving the changes made to the system.

→ Discard Changes

Use the **Discard Changes** option to discard the changes and remain in the BIOS configuration setup program.

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→ Load Optimal Defaults

Use the **Load Optimal Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F9 key can be used for this operation.**

→ Load Failsafe Defaults

Use the **Load Failsafe Defaults** option to load failsafe default values for each of the parameters on the Setup menus. **F8 key can be used for this operation.**

Appendix

A

System Specifications

7.9 Motherboard Specifications

The system comes with an IEI AFLMB-ATOM motherboard. The detailed specifications for the motherboard are listed below.

Specification	AFLMB-ATOM
Northbridge	Intel® 945GSE
Southbridge	Intel® ICH7-M
Processor	1.6 GHz Intel® Atom™ N270 processor
FSB Speed	533 MHz
Supported Memory	One 200-pin 2.0 GB (max.) 533 MHz or 400 MHz DDR2 SDRAM SO-DIMM (system max. 2.0 GB)
System BIOS	AMI BIOS
Hard disk drives	Two SATA drives
VGA	Integrated in the Intel® 945GSE
LAN	Realtek RTL8111CP PCIe GbE Controllers
Expansion Options	One PCIe Mini
Super I/O	ITE IT8718F
Audio Codec	RealTek ALC888
Audio Amplifier	NXP TDA1517P
Serial Port	One RS-232 One RS-232/422/485

A.1 Screen Specifications

An 8.4" LCD screen is installed in the monitor. Specifications for the screen are shown below.

	Toshiba Color TFT LCD
Size	8.4"
Model	LTA084C270F
Resolution (pixel)	SVGA (800 x 600)
Active Area (mm)	170.4 x 127.8
Pixel Pitch (mm)	0.213
Mode	TN

Number of Colors	262K
View Angle (H/V)	120/100
Brightness (cd/m²)	400
Contrast Ratio	400:1
Response Time (ms) (at 25°C)	20 t _{ON} 25 t _{OFF}
Power Consumption (W)	6.0
Interface	1ch LVDS
Supply Voltage (V)	3.3
Backlight	2 CCFL
Outline Dimensions (mm)	199.5 x 149.5 x 12.0
MTBF	50,000

A.2 Touch Screen Specifications

A 5-wire resistive Panjit touch screen is installed in the monitor. Specifications for the touch screen are shown below.

	PanJit 1084403B
Type	Analog Resistive Type Touch Panel
Input Method	Finger, Stylus or gloved hand
Wire Type	5-wire
Maximum Voltage and Currant	DC7V
Position Accuracy	Less than 1.5%
Isolation	≥20M ohm
Resolution	4096 x 4096 dpi based on controller resolution
Activation Force	Typical: less than 100g Optional: custom activation force and palm rejection
Controller Interface	RS-232 or USB 1.1
Light Transmission	Anti-glare type: 78% - 90%
Temperature (Typical)	Operating: -10°C to 60°C Storage: -20°C to 70°C

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Relative Humidity	Operating: 20% to 90%RH Storage: 20% to 90%RH
Electrostatic Protection	Touch Panel: 30KV (Contact/Air) Controller: 20KV (Contact/Air)
Surface Hardness	3H and above per LIS K5400
Life (Hitting)	More than 10 million for 5-wire touch panel
Life (Drawing)	More than 300 K alphabets for 5-wire touch panel
OS Compatibility	Windows: XP/XP Embedded Windows 2000 Windows ME Windows 98 SE Windows CE.Net 4.2 (x86 and ARM) WHQL certified Linux: Fedora Core I/II Mandrake 10.0/10.1 RedHat 9.0

A.3 VGA Webcam

A digital camera is preinstalled in the front panel of the system. Specifications for the VGA digital camera are listed below:

	VGA Webcam (CN0314-MM00-MI01)
Optical Format	1/4-inch
Active Image Size	3.58 mm (H) x 2.69 mm (V) 4.48 mm diagonal
Active Pixels	640 (H) x 480 (V)
Pixel Size	5.6 um x 5.6 um
Color Filter Array	RGB Bayer pattern
Shutter Type	Electronic rolling shutter
Max. Data Rate/ Master Clock	12~13.5 Mps / 24~27 MHz
Frame Rate	30 fps at full resolution (640 x 480)
ADC Resolution	10-bit, on-chip

Responsivity	1.9 V/lux-sec
Dynamic Range	60 dB
SNR_{MAX}	45 dB
Power Consumption	30 mA (preview mode)
Operating Temperature	-20°C ~ +80°C
PCB Layer	4 layers

A.4 Power Adapter

A SPI power adapter unit is provided with the system. Specifications for the power adapter are listed below.

Output	Nominal	12.0 V DC	
	Regulation	11.4 V ~ 12.6 V	
	Ripple/Noise	150 mV	
	Min	0 A	
	Max	5.0 A	
Protection	Short Circuit	Yes	
	Over-current	Yes (5.75 A ~ 7.5 A)	
	Over-voltage	Upper trip limit: 13 V ~ 18 V DC	
Time	Hold Up	8 ms minimum	
Input	Min.	90 V	
	Nominal	115 V ~ 230 V	
	Max.	264 V	
	Frequency	47 Hz ~ 63 Hz	
	Efficiency	$\geq 80\%$ 115 Vac $\geq 80\%$ 230 Vac	
Environment	Temperature	Operating	0°C ~ 40°C
		Storage	-20°C ~ 65°C
	Relative Humidity	Operating (non-condensing)	20% ~ 80%
		Storage (non-condensing)	10% ~ 90%
Reliability	MTBF	60,000 hours of continuous operation at 25°C	

Appendix

B

External Connector Pinouts

B.1 Introduction

Pin out signal definitions for the external connectors are provided in this appendix.

B.2 External SATA Connector

The ACT-08A-ATOM has one external SATA connector on the rear panel.

PIN NO.	DESCRIPTION
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND
8	GND
9	GND

External SATA Connector Pinouts

B.3 LAN Connector

The ACT-08A-ATOM has one RJ-45 connector to provide GbE connectivity.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	X1+	2	X1-
3	X2+	4	X2-
5	VCC2_5	6	GND
7	X3+	8	X3-
9	X4+	10	X4-
11	X1-	12	ACT#1
13	LINK1000 LED	14	LINK100 LED

LAN Connector Pinouts

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B.4 Power Connector

The power jack on the rear panel of the ACT-08A-ATOM is a 12 V DC input power connector.

PIN NO.	DESCRIPTION
1	12V
2	GND
3	GND

Power Connector Pinouts

B.5 Serial Port Connector (COM1)

The ACT-08A-ATOM has a DB-9 female connector for connectivity to RS-232 devices.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD1	6	DSR1
2	RX1	7	RTS1
3	TX1	8	CTS1
4	DTR1	9	RI1
5	GND		

COM1 Pinouts

B.6 Serial Port Connector (COM3)

The ACT-08A-ATOM has a DB-9 female connector for RS-232/422/485 devices.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD3/TX3-/D-	6	DSR3/RX1-
2	RX3/TX3+/D+	7	RTS3/RX1+
3	TX3	8	CTS3
4	DTR3	9	RI3
5	GND		

COM3 Pinouts

B.7 USB Connectors

The ACT-08A-ATOM has four USB 2.0 connectors.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	USBVCC2	5	USBVCC2
2	D4F-	6	D5F-
3	D4F+	7	D5F+
4	GND	8	GND

USB1 Connector Pinouts

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	USBVCC1	5	USBVCC1
2	D3F-	6	D2F-
3	D3F+	7	D2F+
4	GND	8	GND

USB2 Connector Pinouts

Appendix

C

Safety Precautions

**WARNING:**

The precautions outlined in this chapter should be strictly followed. Failure to follow these precautions may result in permanent damage to the ACT-08A-ATOM.

C.1 Safety Precautions

Please follow the safety precautions outlined in the sections that follow:

C.1.1 General Safety Precautions

Please ensure the following safety precautions are adhered to at all times.

- ***Follow the electrostatic precautions*** outlined below whenever the ACT-08A-ATOM is opened.
- ***Make sure the power is turned off and the power cord is disconnected*** whenever the ACT-08A-ATOM is being installed, moved or modified.
- ***Do not apply voltage levels that exceed the specified voltage range.*** Doing so may cause fire and/or an electrical shock.
- ***Electric shocks can occur*** if the ACT-08A-ATOM chassis is opened when the ACT-08A-ATOM is running.
- ***Do not drop or insert any objects*** into the ventilation openings of the ACT-08A-ATOM.
- ***If considerable amounts of dust, water, or fluids enter the ACT-08A-ATOM,*** turn off the power supply immediately, unplug the power cord, and contact the ACT-08A-ATOM vendor.
- **DO NOT:**
 - Drop the ACT-08A-ATOM against a hard surface.
 - Strike or exert excessive force onto the LCD panel.
 - Touch any of the LCD panels with a sharp object
 - In a site where the ambient temperature exceeds the rated temperature

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C.1.2 Anti-static Precautions



WARNING:

Failure to take ESD precautions during the installation of the ACT-08A-ATOM may result in permanent damage to the ACT-08A-ATOM and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the ACT-08A-ATOM. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the ACT-08A-ATOM is opened and any of the electrical components are handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband:*** Wearing a simple anti-static wristband can help to prevent ESD from damaging any electrical component.
- ***Self-grounding:*** Before handling any electrical component, touch any grounded conducting material. During the time the electrical component is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad:*** When configuring or working with an electrical component, place it on an anti-static pad. This reduces the possibility of ESD damage.
- ***Only handle the edges of the electrical component:*** When handling the electrical component, hold the electrical component by its edges.

C.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the ACT-08A-ATOM, please follow the guidelines below.

C.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the ACT-08A-ATOM, please read the details below.

- Except for the LCD panel, never spray or squirt liquids directly onto any other

components. To clean the LCD panel, gently wipe it with a piece of soft dry cloth or a slightly moistened cloth.

- The interior of the ACT-08A-ATOM does not require cleaning. Keep fluids away from the ACT-08A-ATOM interior.
- Be cautious of all small removable components when vacuuming the ACT-08A-ATOM.
- Turn the ACT-08A-ATOM off before cleaning the ACT-08A-ATOM.
- Never drop any objects or liquids through the openings of the ACT-08A-ATOM.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the ACT-08A-ATOM.
- Avoid eating, drinking and smoking within vicinity of the ACT-08A-ATOM.

C.2.2 Cleaning Tools

Some components in the ACT-08A-ATOM may only be cleaned using a product specifically designed for the purpose. In such case, the product will be explicitly mentioned in the cleaning tips. Below is a list of items to use when cleaning the ACT-08A-ATOM.

- **Cloth** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the ACT-08A-ATOM.
- **Water or rubbing alcohol** – A cloth moistened with water or rubbing alcohol can be used to clean the ACT-08A-ATOM.
- **Using solvents** – The use of solvents is not recommended when cleaning the ACT-08A-ATOM as they may damage the plastic parts.
- **Vacuum cleaner** – Using a vacuum specifically designed for computers is one of the best methods of cleaning the ACT-08A-ATOM. Dust and dirt can restrict the airflow in the ACT-08A-ATOM and cause its circuitry to corrode.
- **Cotton swabs** - Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas.
- **Foam swabs** - Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

Appendix

D

BIOS Configuration Options

D.1 BIOS Configuration Options

Below is a list of BIOS configuration options described in **Chapter 7**.

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Appendix

E

Watchdog Timer


NOTE:

The following discussion applies to DOS environment. IEI support is contacted or the IEI website visited for specific drivers for more sophisticated operating systems, e.g., Windows and Linux.

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMI or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer:

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table E-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. While the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the Watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

**NOTE:**

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system resets.

Example program:

; INITIAL TIMER PERIOD COUNTER

;

W_LOOP:

```
MOV    AX, 6F02H    ;setting the time-out value
MOV    BX, 05        ;time-out value is 5 seconds
INT     15H
```

;

; ADD THE APPLICATION PROGRAM HERE

;

```
CMP     EXIT_AP, 1    ;is the application over?
JNE     W_LOOP        ;No, restart the application
```

```
MOV     AX, 6F02H     ;disable Watchdog Timer
MOV     BX, 0         ;
INT     15H
```

;

; EXIT ;

Appendix

F

Hazardous Materials Disclosure

F.1 Hazardous Material Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	x	O	O	O	O	x
Display	X	O	O	O	O	X
Printed Circuit Board	X	O	O	O	O	X
Metal Fasteners	X	O	O	O	O	O
Cable Assembly	X	O	O	O	O	X
Fan Assembly	X	O	O	O	O	X
Power Supply Assemblies	X	O	O	O	O	X
Battery	O	O	O	O	O	O
<p>O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006</p> <p>X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006</p>						

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此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有“环境友好使用期限”的标签，此期限是估算这些物质“不会有泄漏或突变”的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	X	O	O	O	O	X
显示	X	O	O	O	O	X
印刷电路板	X	O	O	O	O	X
金属螺帽	X	O	O	O	O	O
电缆组装	X	O	O	O	O	X
风扇组装	X	O	O	O	O	X
电力供应组装	X	O	O	O	O	X
电池	O	O	O	O	O	O
<p>O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。</p> <p>X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。</p>						